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MPAU Convocation

सोळावा पदवीदान समारंभ
महात्मा फुले कृषि विद्यापीठ, राहुरी

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Editor :
SUTINDER SINGH

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The Role of Language in National Integration

Shivendra K. Verma*

This paper is organised in two parts: a discussion of a few general notions followed by an analysis of the roles of languages in a multilingual country.

Man is a zoonphonanta, a language-animal; in fact, the only animal who can use a complex, creative, and innovative system of symbols (both phonic and graphic) for purposes of communication ranging from the expression of everyday, ordinary, interpersonal interactions to the externalisation of metaphysical perceptions. Language is a very powerful and sensitive tool. It can create and also destroy, reveal and also conceal, heal and also hurt, ease and also obstruct, amplify and also restrict, act as a facilitator and also as a barrier, be a linker and binder and also a divider, be used as a secret code to which others have no access at all and also function as an open code.

Language is the most creative form of human communication in terms of which culture is preserved and transmitted. Animals and birds can't tell lies; only human beings can say onething and do something else.

We make a distinction between language and dialect, between 'minor' and 'major' languages, between the language(s) of the minority group(s) and those of the majority group. We have also been loosely talking about developed languages and undeveloped languages, rich languages and poor languages. We must, however, remember that every language, every dialect is a rule-governed creative system which has a built-in mechanism for drawing on its own resources and also using its generative power to supply new words and phrases to meet the needs of the people who use it. We are of the view that all human languages have the potential for being developed for all the purposes that the human society and the human brain can conceive. An undeveloped language is a language that has been deprived of its right to perform certain functions in its own society. Mahatma Gandhi made this point emphatically in 1928: "There never was a greater superstition than that a particular language can be incapable of expansion or of expressing abstruse or scientific ideas. A language is an exact reflection of the character and growth of its speakers." To quote M.A.K. Halliday (1964): "No one should be made to feel that his language is no good. A speaker who is made ashamed of his own language habits suffers a basic injury as a human being; to make anyone, especially a child feel so ashamed is as indefensible as to make him feel ashamed of the colour of his skin." It is clear from what has been stated above that language is the most powerful and effective instrument of culture; it is the most important vehicle for the sense of belonging. It should therefore be handled with care and understanding. Our slogan is: give your language a good hand and it will never let you down. It will externalise its latent powers to prove itself to be able to deal with, what may appear to be, difficult tasks.

India is a multilingual, multiracial, and pluricultural country. It has fourteen languages listed in the Constitution and two hundred and twenty one languages spoken by 10,000 or more speakers. It is natural for people in such a setting to speak two or more languages. They have different degrees of competence in the four language skills: reading, writing, speaking, and understanding. What is crucial for the maintenance of multilingualism in our country is not the philosophy underlying the concept of 'melting pot' but the philosophy underlying the image of 'salad bowl'

**Director, Central Institute of English and Foreign languages (CIFEL), Hyderabad-500 007.*

where each item has its characteristic features and yet it contributes to the richness of the overall pattern. Our mother tongue as first language is our window on the expanding universe around us and also on the micro universe within us, learning a language beside one's own mother tongue is opening for oneself a second window on the landscape of being.

What a multilingual and pluricultural country like India needs is not just one link language but a chain of link languages for national cohesion, cultural integration and areal mobility: a state-level link language (i.e., the official language of the state to bind the different state-level linguistic units into one whole), a national link language (i.e. the official language of the country to bind the different states into one whole), an associate link language at the national level (i.e., English as a language of national workshops, seminars, services, administration, of interaction between the state governments and the Central Government), an international link language (i.e. English for participation in international trade, commerce, aviation, seminars/workshops/conferences, and political meetings. (Verma, 1988, p. 59). In addition, there are local inter-state link languages which are bridge languages used in border areas between two or more states. Then there are pidgins functioning as 'linkers' for example: Nagamese in Nagaland. Thus multilingualism in our setting is a resource. It enables us to use different languages for different purposes in different contexts. It also enables us to respect and realise the value of all the languages in contact. A link language in a vast country like ours has to be a language for use by the common people for purposes of easy communication. The notion of 'a chain of link languages' has an important significance in India. It attempts to weld the different parts of the country into one nation. Language conflicts and tensions can be reduced if the society and the government assign values and functions to the languages keeping in view the fact that underlying the social and linguistic diversities in India there is a vital thread of sociolinguistic unity. The point that we have to keep in view is that the official state language has a higher linking value than any other language at the state level; the official national language has a higher linking value than any other language at the national level, and the international link language has a higher linking value than any other Indian language at the international level and has a marked academic value for the urban, educated elites.

The Indian linguistic scene clearly demonstrates that attempts to further the use of any language (native or non-native) are considered to be efforts to reduce the political, social, cultural, and economic rights of all or of some of the language groups. What is role-expansion for one language is role-restriction for the other languages in contact. Role-restriction, if not controlled in time, may lead to attrition, which in its turn may lead to language tension, rivalry, and violent outbursts. (Verma, 1989, p. 43).

We should remember that the variety of languages spoken is an asset. We must not subject it to violence and abuse. We can and should use this asset and resource for enriching our languages and cultures. As a free nation we are committed to the modernisation of Indian languages in order to enable them to articulate those ideas, views, and visions which are characteristic not only of the changing politico-economic and socio-cultural scenes in India but also of a brave new world. Modernisation of Indian languages is an external manifestation of language change, language identity, and language status—a marker of the adaptability of languages to the changing needs of the speakers.

The position that we would like to take up here is that English and the major Indian languages should interact in an atmosphere of creative tension and play their roles in national integration and the socio-economic growth of the country. Please note that different languages in a multilingual setting have different roles to play. The mother tongue has a role; the official state language has a role; the official national language has a role; English has a role; foreign and classical languages have their roles. They are complementary, and can co-exist peacefully. These roles will have to be redefined periodically in the light of the changes in the socio-linguistic needs of our country. Our languages look different but underlying them there is a profound linguistic and cultural unity and they all represent, what may be called, the Indian world-view. We are all one; our joys and sorrows are common; our achievements and failures are common. Our castes and cultures, our faiths and beliefs may appear different but they are different manifestations of our Indianness. The struggle between different degrees and types of darkness and our unending quest for light underlies all our literature written in different languages. Science has given us the concept of 'binocular vision' but the Indian languages have given us a new concept: a multiocular view of the richness, complexity and greatness of our country. Let us guard against those forces which are out to disrupt the unity of our country by setting up politically motivated narrow linguistic pockets. Let us resolve that we will all learn, in addition to our mother tongue, at least one other major Indian language. This alone can make us realise the beauty and significance of our 'multiocular view'. ☐

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Open University System

A Broadbased Attempt at Distance Education

Dhaneswar Harichandan*

Present Scenario

The demand for education in general and higher education in particular has increased phenomenally in the last few decades which is evident from the growth of educational facilities and enrolment. Due to the expansion of school education (both primary & secondary) as a commitment to attain universalisation of primary education, the number of students seeking admission to institutions of higher education has increased on an average at the rate of about 10 per cent per annum over the last three decades yet the prevailing enrolment ratio of 4.8 per cent (at the level of higher education) is much less than that of many developing countries. Statistically, from a mere 0.2 million in 1950-51, the enrolment in university institutions touched a formidable about four million in 1986-87. During the same period, the number of colleges rose from 798 to 6040 and the number of universities from a modest 27 to 179. Similar increase has taken place in professional education that includes engineering colleges, medical and agricultural education. Despite the fact that the number of institutions and the enrolment rates have increased, in recent years, the inadequacy of the formal system, especially of higher education, to cater to the varied educational needs of the society has come to be recognised. Besides, there are other categories of people who are also in need of education. They include:

1. In service persons who for economic or other reasons had to take up jobs at an early age but are on the look out for an opportunity to improve their educational qualification.
2. Drop outs who later become motivated to resume their education.
3. Persons in geographically remote rural areas where there are no institutions of higher education.
4. Socially and economically backward sections of society.
5. Overflow from colleges/university teaching departments where admissions are made on merit and for a fixed number of seats.
6. Retired personnel who want to take up studies to keep themselves occupied.
7. Persons who want to learn and earn simultaneously.
8. Handicapped persons.
9. Persons who want to study a subject just for the love of it, or to satisfy their curiosity.
10. Persons who need some additional training in their vocation for updating their knowledge.
11. Those students who are not able to fulfil the criteria for entry in the formal stream of higher education.

Obviously, to cater to the needs of such a clientele education has to be more flexible, dynamic and innovative, so that learner is free to pace and time the studies according to his/her convenience. It could also be available to a larger number of people who were hitherto denied such opportunities. That is the essence of the answer to the question: Why distance education? Over the years attempts have been made to provide such a system of education.

Why Distance Education?

Distance education is being called upon to meet some of the felt needs in several countries all over the world. The nature of felt needs varies from country to country, but the need for distance education is being recognised both in developed and developing countries. It is felt that equality of educational opportunities should be provided, there should be greater access to higher education and those who have missed educational opportunities earlier should have a second chance. In view of the changed circumstances, there is a need for providing life long educational opportunities for working people and housewives as well. But in developing countries, there is a need to meet the shortages of technical manpower which the existing conventional universities are unable to meet. Further the quality of education should be made relevant to the needs of the country. A system that can meet all these demands has to be innovative and flexible and distance education, it is believed can meet some of the educational needs of the country. Several countries of the world which practise distance education are U.K., Spain, The Netherland, France, Australia, Canada, New Zealand, Japan, China, India, Indonesia, Pakistan, Thailand, Korea, the U.S.S.R. etc.

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* *Doctoral Fellow, Centre for Educational Studies, Indian Institute of Education, Kothrud, Pune 411 029.*

What is Distance Education?

Distance education implies all those forms of teaching which make use of non-personal media. In this system the learner remains separated in terms of space and time from the subject expert for the most of the instruction period. It suggests that it is a form of education which is not face to face, which separates the teachers from the students and the consequent use of a range of media to enable the learning process to take place according to one's own convenience. Holmberg (1977) has offered the proposition that distance education is any one of the various forms of study which are not under the continuous, immediate supervision of tutors present with their students in lecture room, and that it includes all those teaching methods in which teaching is conducted through print, mechanical or electronic devices. Thus emerge the following characteristics of distance education:

— no direct contact between the teacher and the taught
— use of a range of technical media for communication
— provision of two-way communication
— the possibility of occasional seminars
— the influence of an educational organisation both in planning and preparation of learning materials
— absence of a learning group as people are usually taught as individuals and not in groups
— bridges the gulf of geographical isolation
— access to a large number of people
— learners can learn and earn simultaneously
— a special type of mass education

Distance Education in Inda and Abroad

Distance education in Australia is known as the 'External System', unofficially it is also called as 'off campus study'. In North America, it is known as 'independent study'. 'Home study' is used to describe correspondence programmes of private schools both in North America and Europe. In France, it is known as 'tele-enseignement', in Germany it is described as 'Fernstudlum' and in Spanish speaking countries it is described as "education a distancia" (Rumble and Keegan, 1982). 'Extramural' refers to distance education in New Zealand. In some countries, the term "correspondence education" is widely used.

Open university system, a distinct form of distance education, is found all over the world. The British Open University is known as U.K. Open University (UKOU), in Thailand it is Sukhothai Thammathirat Open University (STOU), in Sri Lanka it is Open University of Srilanka, in Pakistan it is Allama Iqbal Open University (AIOU), Korea—it is known Air and Correspondence University (KACU), in Japan—University of the Air (JUA), in Indonesia—Universities Terbuka, in West Germany—fern Universitat, Canada—Athabasca University, Universidad Nacional Abierta (UNA) in Venezuela, in Spain—Universidad Nacional de Educacion a distancia, Everyman's University in Israel, and it is known as Central Radio & Television University (CRTU) in China.

Forms of Distance Education in India

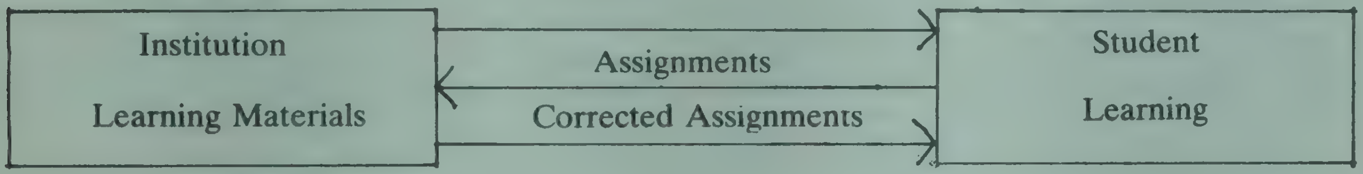
Distance education has been variously described as correspondence education, open education, open learning, Open University etc.

Correspondence Education

Distance education was introduced in India in July 1962 with the establishment of the School of Correspondence Courses and Continuing Education of the University of Delhi. More than a quarter century has passed since this innovative step was taken and the meantime about 45 universities have considered it desirable to offer their degree and diploma programmes through correspondence. Correspondence education offers courses more or less as parallel to those in formal education system. It is attached to regular universities organisationally by forming separate directorates, namely, Directorate of Correspondence Course. On the other hand, correspondence education has become a part of the university structure as a non-formal branch of the formal system, guided by similar entry qualifications, course design, time duration of the course, and evaluation procedures. The only point of departure from the formal educational institution is that in correspondence course instruction is provided through postal delivery system. Here the course is broken up into a number of modules which are posted to the student, who works on the material sent to him. In this context some original work is called for in breaking up the course into graded, self contained learning units which are intelligible and comprehensible to the student who has no other aid. The problem with this form of distance education is that it is a unilinear, uniform course, which cannot follow the differing learning ability and path of the individual student, as the system of private tuition does. Also self instructional material despatched to the students by post are dubbed to be substandard and inferior that often it is called, correspondence education is one which sells cheap books in high rate through easy instalments. Prof. Joginder Kaushal is of the opinion that "hitherto in most of the universities, correspondence course departments have been in use as havens for mediocrities who cannot make the grade in academic departments" (Kaushal, 1986). In the words of Prof. Ram Reddy, "many universities treat their correspondence institutes as colonies; the revenues generated by the latter are ploughed into the former. The net result has been they failed to make such impact on the educational system of the country" (Reddy, 1985-86). The danger it faces is that correspondence education may commercialise the education system and be regarded merely as a source of income to the university running the course.

Due to all these reasons, correspondence education is perceived as marginal and peripheral to the real business of education and viewed by the diehards as inferior courses. It is yet to establish itself as an independent system of education and has not yet responded to the challenge of designing and offering newer and more distinct courses which would be helpful to the learners.

Fig. 1: **A correspondence education model of distance education**



The correspondence course institutes send learning materials by post to the student, the student studies the materials and posts assignments back to the institution which marks and comments upon them and posts them back to the student.

Open University System

A second form of distance education is one which breaks away from the established syllabus and content of the schools and universities, and innovates with new learning content. This new content may relate to the age and stage of learning. For instance an illiterate adult can reach the literacy level of a child at the end of the second standard of the Primary School through 6 weeks of literacy learning in 72 hours of study. Again science and technology learning is changing and developing very fast. Renovating and modernising science and technology modules can be devised to provide scientists and technicians for updating their skills and specialising in the latest in their fields. What has recently emerged an answer to technological obsolescence, in the programme of distance education, is the means of continuing and updating of knowledge. In this type distance education will operate the open learning system at the equivalent of every level of learning and skill.

Open learning system is based upon the philosophy that man is a continuous learner throughout his life time and learning must be in accordance with his aptitude and that teaching must not be rigid and linear process but has to be adjusted to the pace and capabilities of the learner. A student of the open university system may be just a beginner in respect of some of the branches of knowledge and quite proficient in some others. Such a student may be a part of the open school system rather than the open university system. Since there is utmost flexibility in the philosophy of open learning it may be meaningful to learn the system simply as open learning system without any connotation of higher or lower learning as signified by the terms university or the school. Since it may confuse, we may continue to use the term open university for convenience.

The major thrust in higher education today is towards providing broader options for learning by non traditional form through the open university system. The adjective open was not formally applied to any school or university until 1969, when Queen Elizabeth II granted a charter to a new British University, the Open University. While the adjective is used to qualify the noun, a process is suggested whereby learning is not enclosed or encumbered by barriers, not confined or concealed, but accessible and available. A continuum of access and opportunity is also implied. Open University system, to a greater or lesser extent efforts to expand the freedoms of learners, freedoms in more significant dimensions, in admissions, selection of courses, individual adaptation to the curriculum and time (that is learners are permitted to work at their own pace and convenience). Ideally Open education would take the form of "education permanente" open to people at all levels, cradle to grave, with learners stopping in and out as their needs for learning require.

A very comprehensive document entitled "open learning systems and problems in post secondary education" by Mackenzie, Postgate and Scupham (1975) brought out by UNESCO describes open learning as follows: 'such systems are designed to offer opportunities for part-time study, for learning at a distance and for innovations in the curriculum'.

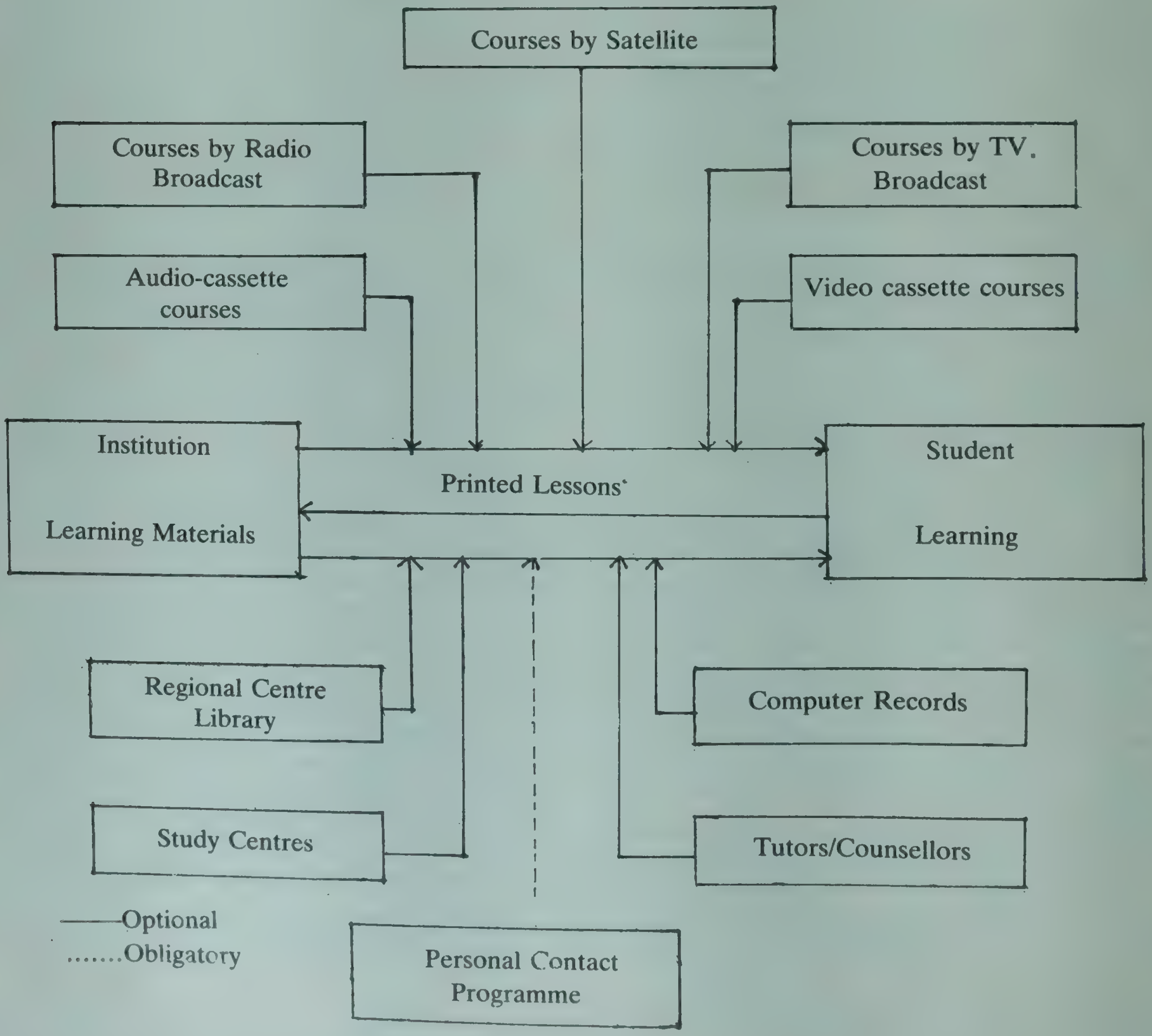
In the simplest term, open university may be defined as innovative educational pattern brought about to fit society's changing needs and opportunities which must be provided to meet the challenge by the learner. It replaces the formal system of rigid parameters with flexible ones and provides for individualised learning outside the formal education institution. It serves the people for whom higher education has previously been inaccessible and offers diversified courses which are socially relevant and economically productive. It also uses multimedia approach in imparting education which include print material, audio and video cassettes etc.

In the open university system the link between learning materials and learning is promoted by as coherent a structure as possible. The student is supported by a wide range of activities, most of them optional. This tends to strengthen the possibility that learning takes place and that unnecessary drop-outs are prevented.

The schematic diagram brings out certain differences between correspondence education and open university system.

1. The correspondence education functions within the overall framework of a conventional university, follow the rules and regulations, course structure etc., of the formal system, do not have scope for innovation and are not flexible enough to adjust to the needs of different categories of learners in contrast to the open university system.
2. Print is the only medium in correspondence education as is visualised in Figure 1, while open university uses multi media approach (Fig. 2).
3. The course materials of correspondence course are supplied to and used by its registered members only while in open university most of the teaching material is accesssible to all who may not be the registered students of an open university particularly its radio and television programmes.
4. The course material produced by the open university is open to scrutiny and is criticised if it is not upto the mark—open accountability, whereas it is not the case in correspondence education.
5. In correspondence education there is less choice of choosing courses of study, but in open university students have more freedom and a wide choice e.g. it is possible in the Andhra Pradesh Open University for a student of philosophy to study chemistry at the undergraduate level, if he so chooses—a combination which is normally not permitted in a conventional system in India.
6. More significant than all these features is the legal

Fig. 2: An Open University Type Model



status conferred on and inherent in the concept of an open university. The correspondence institutions, as part of the formal university system, do not have the autonomy of a university.

Growth and Development of Open University System in India

In the International Education Year 1970, the Ministry of Education organised a seminar on the open university, to consider its establishment in the country. Prof. V.K.R.V. Rao, the then Minister of Education inaugurating the seminar felt that the open university using the latest education and communication technology should offer quality education to a much larger body of population which remains outside the so called university system. The seminar recommended the establishment of an open university in the country and made several suggestions relating to its objectives, organisation, finances and methods of work.

Following the recommendations of the seminar, the Govt. of India appointed an eight member working group with G. Parthasarthy (1974) as chairman. The group recommended that the Govt. of India establish, as early as possible, an open university by an act of Parliament. The university should have jurisdiction over the entire country so that when it is fully developed, any student even in the remotest corner of the country can have access to its instructions and degrees.

Later in 1982 the committee to enquire into the working of central universities under the chairmanship of Dr. (Mrs.) Madhuri R. Shah recommended that practical steps should be taken for creating a national open university without any delay.

At the state level, in 1978 the then Education Minister of Andhra Pradesh based on a discussion with Prof. G. Ram Reddy who then was the V.C. of Osmania University, evinced keen interest in the concept of an open university. A committee was appointed to study the possibility of starting an open university. The committee submitted its report to the government and a bill based on it was passed by the legislature in August 1982. The Andhra Pradesh Open University (APOU) was inaugurated by the President of India on 26th August, 1982. Thus the first Indian Open University came into existence providing a new vista of possibilities, in Indian education system.

However, the then Prime Minister of India Mr. Rajiv Gandhi in his first broadcast to the nation in January 1985, gave expression to this in the form of a policy statement when he announced the establishment of a national open university as a part of new education policy. The Indira Gandhi National Open University (IGNOU) was established in September, 1985 by an Act of the Parliament. The basic task of IGNOU is to advance and disseminate learning and knowledge by a diversity of means including the use of any communication technology. In the process it has to increasingly aim at democratisation of higher education and maintenance of high standards covering larger segments of population, vocations and professions. Besides it has to encourage and strengthen the open and distance education system in the country. It provides access to higher education to all those who desire to improve their qualifications, skills and competence.

Prospects

The establishment of the IGNOU is an important milestone in the development of distance education system in the country, in that it augments opportunities for higher education, ensures success, is cost effective and promotes a flexible and innovative system of education. It is hoped that the university will play a leadership role in strengthening distance education in the country, as its success will ensure the success of such a university in each state particularly in rural areas where the educational opportunities are the weakest. The university is not a substitute for the formal system of education nor does it make the formal system infructuous. What is aimed at is to widen educational opportunities by using modern communication technology. This is rather a questionable presumption. The extent to which a larning system involving modern communication technology could be appropriate to a culture and social set up which does not seem to support the very concept of distance education is a matter of serious thinking. However, as open university system continues to develop–and the climate for development is encouraged by mobility and aspirations, together with the onward march of new information technologies–some profound changes may be witnessed. They will be related to changing roles–of teacher and taught–to the role of the home and the educational institution as a place of learning. Research both in terms of educational effectiveness and contribution of open university system to the development of higher education is necessary to the developmental trajectory of individual institutions and systems. Hence IGNOU should be the most exhaustively researched of the existing systems.

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Allied Sciences and Agriculture

Speaking of the impact of allied sciences on agriculture, Dr. P.K. Iyengar, Chairman, Atomic Energy Commission, Govt. of India said, "...contemporary knowledge and techniques, have always been used in agriculture to increase the output and improve the quality. In the past two centuries, the developments in different fields of science have contributed a great deal to enhance the agricultural production and productivity. I am certain that the revolutionary developments currently taking place in biological and other sciences are going to alter the agricultural systems even more in the future." Dr. Iyengar was delivering the Convocation Address at the Sixteenth Convocation of the Mahatma Phule Agricultural University, Rahuri. Excerpts

Convocation

Compared to the age of our planet-Earth, which is believed to be about five billion years, the history of mankind is short. The history of man as an agriculturist is even shorter and, goes back to less than 10,000 years. The modern man biologically described as 'Homo sapiens' survived as a food gatherer and hunter for over 50 thousand years.

About 9000 years back, some enterprising individuals among the food gatherers discovered that the cereal grains they have been collecting from distant places could grow luxuriously in their own backyards. This was the beginning of agriculture and man's efforts to domesticate plants and animals to meet his needs for food, feed and fibre. Since then, contemporary knowledge and techniques, have always been used in agriculture to increase the output and improve the quality. In the past two centuries, the developments in different fields of science have contributed a great deal to enhance the agricultural production and productivity. I am certain that the revolutionary developments currently taking place in biological and other sciences are going to alter the agricultural systems even more in the future. I intend to talk about the impact of allied sciences on agriculture.

As a hunter or forager, man required about 20 sq. kilometer area of natural habitat to sustain him. The same area of land under cultivation can support about 6000 people. When man was a hunter and food gatherer the world population was about 8 million which is close to the population of the metropolitan Bombay today.

The beginning of agriculture brought great changes in the life style of humans. The nomadic life changed to permanent settlements. It released a large section of the population from the inconvenience of gathering and hunting for food. They could engage themselves in other pursuits and several civilisations developed independent of each other both in the old and new world. Gradually, this led to large urban centres which do not produce any food but import the same from the neighbouring areas. Rapid transport by air has made it possible to sell fresh fruits grown in New Zealand in the European and North American food stores. Cut flowers from Singapore and Thailand reach the European shops the next morning. Easy availability of food also contributed to geometric increase in human population, which in turn enhanced the demand for agricultural produce.

However, the productivity per unit of land area increased only marginally from the natural stands till the industrial revolution. The latter had its impact on agriculture in the Western countries. The steam engine brought the application of modern science and technology to the farm to replace draft animals. Soon steam tractors were replaced by those operating on petrol and diesel. Farm mechanisation made it possible to enlarge the area under cultivation. Countries like India ruled by colonial powers missed the industrial revolution and their agriculture also remained traditional with low productivity.

The modern farming is based on plant productivity which is essentially a process of energy conversion. The incident light energy from the sun is trapped and converted to chemical bond energy. Besides carbon, hydrogen and oxygen, nitrogen and sulphur are incorporated in organic molecules via light dependent reactions. Cropping systems aim to maximise the conversion of solar energy into the endproducts useful for man. These processes follow the basic laws of thermodynamics. The productivity of modern agriculture has increased tremendously but at the same time the energy inputs especially of the non-renewable energy to agriculture have also increased. At the same time, energy inputs have taken the drudgery out of the farm operations.

The knowledge of physics has contributed to our basic understanding of the process of photosynthesis in which photons are captured and the energy of captured photons regenerates reducing equivalents and ATP which ultimately converts carbon-di-oxide into carbohydrates. Physics has also helped in understanding of the other key life processes—functioning of biological membranes, uptake and transport of water from roots to the tree tops, absorption of ions, heat dissipation, gas exchange and many more processes determining plant and animal productivity.

Developments in physics, electronics and instrumentation have provided new tools useful for agricultural research and also for use on the farm. X-ray diffraction not only helped in understanding of the basic structure of the most important biological molecule—DNA, it also improved our understanding of the structure and behaviour of different soil types. Instruments like atomic absorption spectrometer (AAS) nuclear magnetic resonance (NMR) provide analytical capabilities for agricultural research and development. Some of these advanced instruments are routinely used on the farm in the advanced countries.

Electronic media has played a significant role in educating our farmers through radio and TV.

Advancements in chemistry like the development of Claude-Haber process to make nitrogenous fertilizers led to quantum increase in crop productivity. Further advancements led to the development of insecticides, fungicides and weed killers which protect the crops from different pests. In future, chemically synthesised phermones, plant growth regulators are going to increase productivity and also minimise the adverse impact of agro-chemicals on the environment.

The re-discovery of the Mendel's laws of inheritance and the birth of the science of Genetics at the turn of this century, provided a rational basis for plant and animal breeding. The present high productivity of the crop plants, milch animals and poultry is due to the selection of the desired gene combinations. Of course, proper management and inputs are required to realise the genetic potential.

The second half of this century saw spectacular developments in biological sciences. The discovery of the structure of DNA by Waston & Crick were followed by the deciphering of the genetic code, and how the information in the DNA is passed on to the messenger RNA and determines the sequence of amino acids in the protein molecule. All these developments were possible with inputs and interactions between physicists, chemists and biologists. The science of molecular biology has provided a new understanding of the life processes. Later, the discovery of restriction enzymes that cut the DNA at specific sites and its cloning in microbial cells added yet another dimension to biology. Transgenic plants and animals having specific genes from quite unrelated organisms have been produced. The recombinant DNA technology in association with plant and animal tissue culture is expected to play a significant role in the farming systems of the 20th century.

After the end of the second world war, radiation sources and radioisotopes became easily available. They have contributed a great deal in understanding the basic metabolic processes in plants and animals under normal and stress conditions. The more direct applications have been in inducing genetic variability in crop plants by induced mutations to develop new crop varieties; increasing fertilizer use efficiency; monitoring the fate and persistence of pesticides in soil, groundwater and environment. Extensive experiments the world over have established that post-harvest losses in many agricultural products can be reduced and their shelf life extended by exposing them to gamma radiation. Such irradiated foods are absolutely safe and have no adverse effects on human/animal health. Unfortunately, we have been slow in commercialising this useful technology.

Developments in other areas of science like weather forecasting, space technology, systems analysis, polymer chemistry etc. have implications in farming systems. Agricultural operations in the field are determined by the weather and onset of rains. Scientific weather forecasting—in short, medium and long range—have considerably improved now. This knowledge can help in organizing farm operations in time and prevent losses by taking early protective actions. Remote systems in space provide regular multispectral coverage of the country which can be utilised for the management of land and water resources. They also provide an unbiased estimate of forest cover, waste land, crop estimates, damage due to drought and even diseases and pests.

Lastly, I would like to touch upon the scientific capabilities now available for prediction. With the advances in modelling and availability of rapid computational facilities, effects of natural and man made actions are easy to predict. We can foresee the consequences of the actions and choose between the alternatives. This capability based on scientific data base is new. It has wide applications in agriculture.

Today on a global basis, we have more food than what is needed to feed the world population. The European Economic Community and North America on one hand face the problems of over production and do not know how to dispose off their surpluses, yet people are still starving in some of the African nations. In India, we have just managed to produce enough to meet the requirements.

The world over people need more food, cheaper food and safe food with minimal or no environmental impact. But these are conflicting objectives. To produce more food and the inputs that contribute to increased food production, we need more energy and water, the two basic resources.

Water is going to be a crucial limiting resource for farm production in the future especially so in the State of Maharashtra. Here again, inputs from several different areas can contribute to better management. Techniques in groundwater hydrology and recharge, water harvesting, control of losses due to evaporation, seepage, recycling can make more water available for agricultural uses. Remote sensing can provide information on snow-melt and availability of water in snow-fed rivers originating in the Himalayas, water use in command areas and in weather forecasting.

Electronically controlled overhead or drip irrigation systems can reduce the input of water in farming systems without reducing the productivity. Water pumps operating on photo-voltic cells can provide irrigation in remote villages not connected by power lines. Use of plastics and polymers can prevent evaporation losses from reservoirs as well as the fields.

It will be seen from the above that agricultural science is a multidisciplinary science. The agricultural universities, therefore, have to have in their faculties and research programmes an optimum mix. It is obviously not possible to have everything from crystallography to remote sensing, but it is necessary to cooperate and coordinate with other organisations who have the expertise in these areas. Combined with this is the need to understand and educate the farmers who are ultimately going to decide the productivity in the farm. Thus, agricultural science and the agricultural universities in particular have a major role to play. This in itself should attract the best of brains in the younger generation.

As young graduates, you should accept these new challenges and aim to transform the country into a world agricultural power.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
Sept. 17-21, 1990	Executive Development Programme on Industries and Informatics	To cover basic principles of Information processing, perspective of self initiation to help users through documentation techniques, and to give exposure to use of computers in Informatics.	National Institute for Training in Industrial Engineering (NITIE), Bombay	Mrs. P.G. Joshi, Course Leader, NITIE, Vihar Lake Bombay-400 087
Oct. 2-4, 1990	**5th Annual National Convention of Physics Teachers**	**Themes include Teaching aids in Physics education, Planning of an UG & PG Physics Laboratory Interactions between educational institutions & instrument makers etc.**	**Gandhi Memorial National College, Ambala Cantt.**	**Mr. M.K. Sharma, Convener, 5th IAPT Convention, G.M.N. College, Ambala Cantt.-133001 (Haryana)**
October 7-13, 1990	**National Workshop on Radiochemistry and Applications of Radioisotopes**	**To popularise the study of nuclear sciences in colleges and universities and to highlight the applications of isotopes in research, industry, agriculture and health, etc.**	**Ravi Shankar University, Raipur.**	**Prof. S.G. Tandon, Director of the Workshop & Head, Department of Chemistry, Ravi Shankar University, Raipur-492010.**
December 1, 1990	National Symposium on Science and Technology in Ancient India.	**Topics proposed to be discussed include Astronomy & Mathematics, Metallurgy, Medicine, Aeronautics, Engineering, Computer Science and Artificial Intelligence.**	**B.M. Birla Science Centre, Hyderabad**	**Dr. B.G. Sidharth, Director, B.M. Birla Science Centre, Adarsh Nagar, Hyderabad-500 463**

Information Network for Women and Development Studies

A three-day Workshop on Women & Development Studies Information Network was organised under the joint auspices of Osmania University Library and ICSSR–Southern Regional Centre at Hyderabad, from August 10-12, 1990.

The Workshop was inaugurated by Prof. T. Navaneeth Rao, Vice-Chancellor, Osmania University. In his inaugural speech, he said that there was vast amount of literature on Women & Development. It would therefore be not possible to provide information in all its ramifications to scholars and others interested in Women & Development field without networking and resource sharing. He opined that information was an important resource, particularly information relating to Women & Development and it should form a part of planning process in our country.

Dr. Vina Mazumdar, Director, Centre for Women's Development Studies, New Delhi, who presided, explained in detail the broad objectives of the Workshop. She said, the visualized Information Network on Women and Development Studies would be a voluntary effort on the part of various Libraries and Documentation Centres in India to interlink themselves and pool together a large number of Information sources, systems and services. It would then be possible for any individual researcher or activist to get required information. She emphasized the point that the purpose of the network was not only to have the bibliographical control over the materials but dissemination of information among the wider sections of the society. She also stressed the point that the success of this decentralised system would depend on voluntary contribution of the constituents and willingness to share the information with others. The base of the network would be at the grassroot level and not to look to the command from above, she added. Giving details of the historical backdrop of the women and development studies she referred to the personalities like Ashok Mitra, Raghunath Kelkar, Prof. Ganguli, Prof. Ram Reddy and others who helped in the promotion of Women & Developmental Studies.

Dr. Vina Mazumdar felt that literature that was generated out of research in universities and through the writings of other people interested in women and development discipline was equally important. All available literature need be collected, organised and disseminated on cooperative basis. In this context she referred to the two volumes of computerized Resource Guides that had already been published as an outcome of first Workshop held in 1988. She appreciated this voluntary effort by the participants of the first workshop.

She regretted the fact that the National Policy on Education (1986) did not give adequate attention to the area of Women and Development and hoped that the Review Committee constituted for the revision of educational policy would pay due attention to this important cause.

While concluding Dr. Mazumdar said that the third volume of the Resource Guide should be brought out by the Network before the next conference on Women & Development which was scheduled to take place in the month of February at Jadavpur University, Calcutta. The theme of the Conference will be Women in Religion, Culture and Politics.

Mr. N.B. Inamdar, University Librarian and Director of the Workshop said that the workshop would elaborately discuss the scope and coverage of material that could be included in the resource guide by the constituents of the network. The structure of the network as was decided in the first workshop would be decentralised and voluntary. Mr. Inamdar also mentioned that Resource Guides that would be compiled by the Network in future will not be confined to literature alone but cover institutions and Agencies and expert persons relating to the Women and Development.

Speaking on the topic 'the Network till Date', Dr. Vina Mazumdar provided a detailed account of the activities of the Network relating to Workshop and how it was able to bring out Resource Guide of research materials in two volumes in record time. She also briefly provided details about the proposals that had been sent to the Planning Commission to be taken up during the 8th Plan period. She said some amounts would be made available to the constituents of the network for collecting, organising and preparing data sheets for the third and subsequent volumes of the Resource Guides. She brought to the notice of the participants the importance of collecting materials in all languages in India in addition to English language.

Prof. P.N. Kaula, Emeritus Professor (UGC) spoke on the topic "Women Studies with Specific Reference to their Roles in Librarianship and Networking." He compared the role of women in America, England and India and said Indian women entering Library profession lately were doing well. He stressed the importance of resource sharing and networking for effective dissemination of Information on Women & Development Studies.

The four technical sessions were devoted to discussions on (1) Problems of Compilation of Resource Guides, (2) Problems of Applying AACR II and adopting common standard format for entries of documents, (3) Use of Women's Thesaurus, and (4) Compilation of Directories of Institutions and Resource Persons.

After prolonged discussion the participants agreed on a common format for preparing entries in Resource Guides and filling up data sheets.

Prof. E.G. Parameswaran, Director of ICSSR-Southern Regional Centre who was the Chief Guest at the Valedictory Function, said that Information was a very important resource and constituted base for all human activities including women and development. Narrating his own experience as a Professor, he said in recent years there was considerable increase in Postgraduate women students in Psychology, Education, Management and other Departments of Osmania University.

He particularly made a mention of the Resource Guide on persons (researchers and activists) and said that identification of experts in the field of women and development needed special attention. He further said that younger and junior persons should also be included in this Resource Guide because they would be useful for the cause for longer period and possess potential to update themselves.

Prof. Parameswaran also mentioned the importance of voluntary efforts that were being made in forming the Network on women and development studies and said that there was no dearth of money in India for any dedicated voluntary work. He said organization and dissemination of information in India relating to women and development studies was very scanty. Therefore the deliberations of workshop were very important for scholars and others interested in the cause as well as for the development of women themselves.

The workshop was attended by 50 Senior Library & Information professionals from various Research Organization and University Libraries from all part of India. The financial support was given by the Ministry of Human Resource Development, Dept. of Women & Child Development, Govt. of India, through ICSSR. The details of the Workshop were worked out by the Planning Group for Women & Development Studies Information Network of the Centre for Women & Development Studies, New Delhi. Mr. N.B. Inamdar, University Librarian and Jt. Director, ICSSR-Southern Regional Centre, Hyderabad was the Director of the Workshop.

Training Programme in IREP

Shri Subhash Katyal, Minister of Science and Technology, Govt. of Haryana, recently inaugurated the 6th National Training Course on Integrated Rural Energy Planning (IREP) at Haryana Agricultural University (HAU), Hisar. Speaking on the occasion, Shri Katyal disclosed that in the year 1990-91 a sum of Rs. 78 lakh would be spent on implementation of integrated rural energy programme whereas in the 7th 5-year plan a sum of Rs. 180 lakh was spent. He said that from this year two more blocks have been included for implementation of this programme.

The Vice-Chancellor of HAU Dr. A.L. Chaudhry, who presided over the inaugural function, said that the rate of growth of energy demand all over the world had increased with the fast growing population, industrial expansion and agriculture development. As it was necessary to fill the gap between energy general and demand, he suggested large scale popularisation and adoption of the well tested technology of improved Chullhas, biogas plant, solar cooker, solar water heater, energy plantation, briquetted fuel, and high efficiency stove. Dr. Chaudhry said that the integrated Rural Energy Planning (IREP) Programme which was taken on a pilot basis in a few selected States during the Sixth Plan period had become a full-fledged programme in the Seventh Plan. He said that it was imperative on the part of the scientists and IREP officials to find out the constraints in the implementation of this programme. Dr. Chaudhry suggested the implementation of a nationally acceptable single pattern of energy assessment. About 78% of our population still lived in rural areas, getting only 20% share of the commercial energy available. Of the energy consumed by rural people, 90% continued to be based on non-commercial sources like animal dung, agricultural waste and fire wood etc. This extensive use of non-commercial energy sources was creating large scale deforestation leading to ecological imbalances and environ mental degradation, he added.

25 participants from all over India, all Additional Deputy Commissioners of Haryana and many progressive farmers participated in this training programme. The participants were imparted training in methodology of IREP planning, techno-economic assesment of various energy options, computer modelling of rural energy sector & monitoring and control of integrated rural energy programme.

Refresher Course in Commerce

The Academic Staff College of Pondicherry University recently organised its first 4-week refresher course in commerce for university and college teachers. The course objectives are:

(a) to create an awareness in the teachers of commerce about the recent development in the discipline;

(b) to encourage teachers and researchers in the discipline to undertake projects which would reflect recent development in the functional areas in Personnel, Finance, Marketing, Banking and such others; and

(c) to promote creative and innovative thinking for teaching and research in the discipline and thereby to promote professional commitment to teaching and research.

45 teachers from the states of Tamil Nadu, Andhra Pradesh, Haryana, Karnataka, Kerala, Orissa, Uttar Pradesh and the Union territories of Andamans and Pondicherry are participating in the programme.

PG Degree in Materials Science

The Thapar Institute of Engineering & Technology proposes to introduce M.Sc. degree programme in Materials Science w.e.f. August 1990. Interdisciplinary in approach, it is a three year cooperative programme leading to M.Sc. (Materials Science) degree and has two years of academic component at the Institute and one year of industrial employment. 10 students will be admitted to the programme.

Candidates possessing B.Sc. (Pass or Hons.) with atleast 50% marks in aggregate of Physics, Chemistry and Mathematics are eligible for admission.

The information leaflet giving details of courses of study and other highlights of the programme, tuition fee and other charges, etc., can be obtained from the Registrar, Thapar Institute of Engineering & Technology, Patiala by sending a crossed bank draft of Rs. 15/-

International Congress on Medical Librarianship

The Sixth International Congress on Medical Librarianship (6 ICML) and Pre-Congress Seminar will be held at Ashok Hotel, New Delhi from 24-28 September, 1990 Technical Exhibition for participation by the Publishers, Booksellers & Distributors and Subscription Agencies, Manufacturers of Computers, Telecommunication Systems including CD-ROM, FAX, Software and Destkop Publishing Systems, Photocopiers, Electronic Typewriters, Microfilming, Security Systems, Printing Industry, Suppliers of Library Furniture, Fittings and Stationery, Office Automation, Interiors, etc., will also be organised on this occasion. Further details can be had from the Secretary General, NOC/6ICML, C/o World Health Organisation, I.P. Estate, Ring Road, New Delhi-110 002.

News from Agril. Varsities

Rainfed Agricultural Technology

Shri Shivajirao Deshmukh, Minister for Agriculture, Maharashtra State and Pro-Chancellor of the University presided the tenth convocation of Marathwada Agricultural University.

Dr. Har Swarup Singh, Member (Agriculture), Planning Commission, Govt. of India, delievered the convocation address. He pointed out that Indian agriculture was presently receiving attention from many quarters. Nearly 50 per cent of the total national expenditure was now proposed to be done on agriculture. He pointed out that rainfed agriculture in India covered nearly 70 per cent of the total cultivated area in the country but it was neglected in the past. He said that in the Eighth Five Year Plan, the Government will be giving attention to rainfed agriculture.

Dr. Har Swarup Singh said that on the basis of agro-climatic coditions, India had been divided into different zones. Twentytwo districts of Maharashtra, 11 districts of Madhya Pradesh and one district of Rajasthan together constituted Zone No. 9—Western Plateau and Hills Region. He added that a committee under the chairmanship of Dr. P.V. Salvi, Vice-Chancellor, Marathwada Agricultural University, Parbhani had studied agricultural conditions of this zone which included Marathwada region and this study had drawn attention of the Planning Commission of India to the need for water and soil conservation, horticultural development, animal husbandry and to the problem of unemployment in the region.

Dr. Har Swarup Singh stressed the need for watershed development. He pointed out that the Government could not undertake watershed development programme unless full co operation came from farmers. He cited the model villages Adgaon, Padalsinghi, Palaskheda, Ralegaon Siddhi and Naigaon in Maharashtra where watershed development programmes had been undertaken successfully through efforts of voluntary organisations and local people.

Dr. Singh stressed the importance of rainfed agriculture in the country and emphasised the need to develop appropriate technology to make rainfed agriculture remunerative. While narrating social, economic, psychological and administrative problems in the adoption of rainfed agricultural technology, he pointed out that lack of reasonable prices led to non-adoption of new technology in rainfed farming.

Earlier, Dr. P.V. Salvi, Vice-Chancellor, gave a brief report of the work done by the University during the previous year. He briefly described the various educational programmes under different faculties of the University and the achievements in these programmes during the last year.

Dr. Salvi mentioned the various training programmes organised by the University for rural youths. He congratulated the students of this University, who were successful in the examinations conducted by the Maharashtra Public Service Commission.

While speaking about the research work carried out by the University, Dr. Salvi said that the University had recommended for release improved varieties of crops viz. PVK-400 jowar, MAU selection 9 paddy, SH 84-14 soybean and PH-9 cotton. The University had developed an improved variety of Deshi cotton PK 141 which is recommended for cultivation in Marathwada region. NHB-12, a hybrid variety of cotton, having medium staple length and high productivity had been recommended for command areas in Marathwada. Dr. Salvi briefly reviewed the research undertaken by University scientists in jowar processing and also outlined the research done by the faculties of Veterinary Science, Home Science and Agricultural Engineering. He also gave an account of the various extension activities undertaken by the University.

News from UGC

Countrywide Classroom Programme

Between 10th September to 18th September, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 12 Noon to 1.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
6.00 a.m. to 7.00 a.m.

10.9.90

"Elasticity—Stress and Strain"

"Management-5: Organisation Aids"

"The Challenge of Ocean"

11.9.90

"Using the Heat of Combustion Apparatus"

"Feedback"

"JALMA—Japanese Leprosy Missionary Association"

12.9.90

"Solar Research-III"

"Forts of the Deccan-III: Golconda Fort"

"Sprouted Foods—Food of the Future"

13.9.90

"Coal: New Ways to Get and Use it"

"The Colourful World of Minerals"

"Paninian Linguistics-V"

14.9.90

"Reaching Out to the Heavens"

"Miraculously My Own"

15.9.90

"Chinese Pocelain"

"Naad Sagar Manthan"

"The Man Who Ventured—Sir Edmund Hillary"

16.9.90

No Telecast

17.9.90

"Oscillations and Waves"

"Management-VI: Organisation Methods"

"Fertilizer, Fertilizer, Fertilizer"

18.9.90

"Instrumental Techniques"

"Functioning of Video Cassette

''समाजशास्त्र की प्राथमिक अवधारणाएँ'' — डॉ. आनन्द कुमार

I.A.S., P.C.S. एवं अन्य सभी महत्वपूर्ण परीक्षाओं में समाजशास्त्र विषय लेकर सम्मिलित होने वाले प्रत्याशियों के लिए यह आवश्यक व अपेक्षित ग्रंथ है; इसके माध्यम से समाजशास्त्र की प्राथमिक अवधारणाओं का ठोस व वस्तुपरक ज्ञान प्राप्त किया जा सकता है। प्रथम संस्करण : 1990, पृष्ठ : 760, मूल्य : 80.00 रुपये।

विवेक प्रकाशन
7-UA, जवाहर नगर, दिल्ली-7.

Recorder"

"Hip Joint Replacement & External Fixation"

2nd Transmission
12.00 noon to 1.00 p.m.

10.9.90

"Comets"

"Management-11: Planning"

"Earthworms-I"

11.9.90

"Properties of Chlorides and Oxides of Period III Elements"

"DNA Finger Printing-I: Technique"

12.9.90

"Efficient Structural Forms-I: The Truss System"

"Music in Marble-II: Lunavasahi"

"Hair: Cables of Information"

13.9.90

"COBOL-I: Introduction"

"A Discussion on the Satire of Jonathan Swift (Gulliver's Travels)"

14.9.90

"Chinese Postman Problem-II: A Mathematical Approach"

"Sanskritisation-II"

"Trees of Hope"

15.9.90

"Rabindra Sangeet-III"

"A Touch of Adventure-II"

"Change for the Better"

16.9.90

No Telecast

17.9.90

"Flourescence Spectroscopy"

"Management-12: Bureaucracy"

"Earthworms-II"

18.9.90

"The Transition Metals"

"DNA Finger Printing-II: Application"

German Fellowships for Varsity Teachers

The University Grants Commission has invited nominations by September 15, 1990 from the teachers from the universities and colleges who have not availed of UGC support for visiting a foreign country during the last three years for the award of 12 fellowships offered by the German Academic Exchange Service (GAES) for advanced studies and research at the universities and research institutions in the Federal Republic of Germany (FRG) and in West Berlin for the year 1991-92 in the fields of Natural Sciences, Humanities and Social Sciences (Linguistics, History, Philosophy, Sociology, Economics), Law, and German Language and Literature. The prescribed age limit for these fellowship is 32 years as on January 1, 1991.

Of the twelve fellowships ten are awarded in the disciplines of Natural Sciences, Linguistics, History, Philosophy, Sociology, Economics, and Law and are meant for the staff members in the various departments of universities and affiliated colleges, while the two fellowships earmarked for German Language and Literature are for teachers/students of German Language registered for Ph.D. with an Indian university and are at an advanced stage of their research work in India and wish to go to Germany to collect additional materials for their theses. Working knowledge of German language will be an advantage.

The aspirants are also expected to have established contacts with German universities/institutions for placements and should furnish recent letters from the German scientists/professors confirming that their proposed research projects could be carried out at their institutes under their guidance. Candidates with confirmed placements will be preferred.

INDIAN INSTITUTE OF ADVANCED STUDY
RASHTRAPATI NIVAS, SHIMLA 171005

Advertisement No. 4/90

Applications are invited for the following posts:—

SECRETARY (ADMINISTRATION & FINANCE)—One Post

Pay Scale: Rs. 5900-200-6700

Age limit: 50 years

Qualifications and Experience: The candidate should possess (i) a first or high second class Bachelor's degree of a recognised University; (ii) should have held the post of Director (Administration & Finance) or an equivalent post in a Government department/Autonomous organization/Educational Institution or Registrar in a University for a period of 5 years; and (iii) should have adequate knowledge and working experience of establishment and financial rules.

The candidate selected for the post of Secretary (Administration & Finance) will be provided accommodation in the campus of the Institute on payment of prescribed rent.

RESIDENT MEDICAL OFFICER—One Post

Pay Scale: Rs. 2200-75-2800-100-4000 plus Non-Practising allowance as per rules. Medical Officer on deputation from the C.G.H.S. will be given the pay scale of Rs. 3000-100-3500-125-4500.

Age limit: Upto 35 years (relaxable in the case of employed persons at the discreation of the Selection Committee).

Qualifications and Experience: The candidate should possess M.B.B.S. or equivalent qualification from recognized university with about five years experience.

The Resident Medical Officer will be provided rent free hard furnished accommodation

Applications on plain paper giving full particulars of age, qualifications, experience etc. alongwith testimonials should reach the SECRETARY (A&F), INDIAN INSTITUTE OF ADVANCED STUDY, RASHTRAPATI NIVAS, SHIMLA-171005 BY **30TH SEPTEMBER, 1990**. Persons already in service should apply through proper channel

davp 90/415

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in the AIU Library during August 1990.

EDUCATIONAL PHILOSOPHY

Gow, Lyn and Kember, David. Does higher education promote independent learning. *Hr Edn* 19(3), 1990, 307-22.

Lysons, Art. Taxonomies of higher educational institutions predicted from organizational climate. *Res Hr Edn* 31(2), 1990, 115-28.

Shukla, S.C. Objectives of higher education and relationship betwen education and placement. *Manpower J.* 22(4), 1987, 33-5.

EDUCATIONAL PSYCHOLOGY

Meyer, J H F and others. Individual study orchestrations and their association with learning outcome. *Hr Edn* 20(1), 1990, 67-89.

EDUCATIONAL SOCIOLOGY

Entwistle, Noel and Tait, Hilary. Approaches to learning, evaluations of teaching, and preferences for contrasting academic environments. *Hr Edn* 19(2), 1990, 169-94.

Thoreson, Richard W and others. Gender differences in the academic career. *Res Hr Edn* 31(2), 1990, 193-209

EDUCATIONAL PLANNING

Lallan Prasad. Practicability of delinking of technical and general degree from jobs and its impact on enrolment. *Manpower J* 22(4), 1987, 103-7

Sarupria, Shanti Lal. Economic development strategies and educational policy. *Manpower J.* 22(4), 1987, 141-53.

Taylor, Jim. Determining the subject balance in higher education : How should this be done? *Hr Edn* 19(2), 1990, 239-57.

EDUCATIONAL ADMINISTRATION

Dunkin, M J. The induction of academic staff to a university : Processes and products. *Hr Edn* 20(1), 1990, 47-66.

Marshall, Neil. End of an era : The collapse of the 'buffer' approach to the governance of Australian tertiary education. *Hr Edn* 19(2), 1990, 147-67.

Rutherford, Desmond. A new initiative in departmental reviews : Annual meetings in the faculty of science. *Hr Edn* 19(2), 1990, 195-213.

Saxena, R.P. Governance of Indian universities : From decay to dynamism? *Hr Edn* 20(1), 1990, 91-111.

Tripathi, C.D. Recruitment policy and educational reforms. *Manpower J* 22(4), 1990, 121-27.

Veda Prakasha. The Indian experience of manpower planning and on the relevance of the autonomous colleges idea in this context. *Manpower J* 22(4), 1987, 59-64.

EDUCATIONAL RESEARCH

Boser, Judith A. Surveying alumni by mail : Effect of booklet/folder questionnaire format and style of type on response rate. *Res Hr Edn* 31(2), 1990, 149-59.

EDUCATIONAL TECHNOLOGY

Wagner, Ellen D. Looking at distance education through an educational technologist's eyes. *American J Distance Edn* 4(1), 1990, 53-68.

EDUCATIONAL EVALUATION

De Weert, Egbert. A macro-analysis of quality assessment in higher education. *Hr Edn* 19(1), 1990, 57-72.

Moses, Ingrid. Teaching, research and scholarship in different disciplines. *Hr Edn* 19(3), 1990, 351-75.

Shapiro, E. Gary. Effect of instructor and class characteristics on students' class evaluations. *Res Hr Edn* 31(2), 1990, 135-48.

Wood, Fiona. Factors influencing research performance of university academic staff. *Hr Edn* 19(1), 1990, 81-100.

ECONOMICS OF EDUCATION

Brahm Prakash and Varghese, N.V. Education-employment linkages. *Manpower J* 20(4), 1985, 90-109.

Cameron-Jones, Margot and O'Hara, Paul. Placement as part of higher education. *Hr Edn* 19(3), 1990, 341-49.

Coiner, H. Michael. The lognormality of university endowment in the far future and its implications. *Eco Edn Rev* 9(2), 1990, 157-61.

Kember, David. The use of a model to derive interventions which might reduce drop-out from distance education courses. *Hr Edn* 20(1), 1990, 11-24.

Panchmukhi, P.R. Education-employment linkages : A job market framework, *Manpower J* 20(4), 1985, 110-19.

Sicherman, Nachum. Education and occupational mobility. *Eco Edn Rev* 9(2), 1990, 163-79.

VOCATIONAL EDUCATION

Antia, N.H. Medical education : In need of cure. *Eco Pol Weekly* 25(29), 1990, 1571-73.

Baxter, E Paul. Comparing conventional and resource based education in chemical engineering : Student perceptions of a teaching innovation. *Hr Edn* 19(3), 1990, 323-40.

Murgatroyd, Stephen. Business, education, and distance education. *American J. Distance Edn* 4(1), 1990, 39-52.

Van Berkel, Henk J.M. Assessment in a problem-based medical curriculum. *Hr Edn* 19(2), 1990, 123-46.

Verma, M.C. Role of post-education training in placement and career development. *Manpower J* 22(4), 1987, 77-86.

ADULT EDUCATION

Hayes, Elizabeth. Adult education : Context and challenge for distance educators. *American J Distance Edn* 4(1), 1990, 25-38.

DISTANCE EDUCATION

Amrik Singh. Open university and manpower development : Possibilities and peries. *Manpower J* 22(4), 1987, 47-56.

Ehrman, Madeline. Psychological factors and distance education. *American J Distance Edn* 4(1), 1990, 10-24.

Guri-Rozenblit, Sarah. The potential contribution of distance teaching universities to improving the learning/teaching practices in conventional universities. *Hr Edn* 19(1), 1990, 73-80.

Oxford, Rebecca and Florini, Barbara. What distance education can learn from other disciplines. *American J Distance Edn* 4(1) 1990, 3-9.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Sharma, Meenakshi. Twenty-first century and Indian education. *Prog Edn* 65(1), 1990, 13-5.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities.

BIOLOGICAL SCIENCES

Anthropology

1. Jogi Ram. *A study of blood group polymorphisms in selected populations of Haryana with special reference to their detectability in dried blood on ageing.* Panjab.

Biology

1. Dileep, M.P. *Studies on the larvae of a few demersal fishes of the South West Coast of India.* CUST. Dr. C.V. Kurien, Scientist (Emeritus), Pelagic Fisheries Project, School of Marine Sciences, Cochin University of Science and Technology, Cochin.

2. Jayasankar, P. *Studies on the reproduction of Indian whiting, Sillago sihama Forskal (Percoidei : Sillaginidae).* CUST. Dr. K. Alagarswami, Director, Central Institute of Brackish Water Aquaculture, 12, Leith Castle Street, Santhome, Madras.

3. Usha, P.G. *Studies on the biology of the ariid catfishes of South West Coast of India.* Kerala. Dr. N. Balakrishnan Nair, Chairman, State Committee on Science, Technology and Environment, Gas House Junction, Trivandrum.

Biophysics

1. Munshi, Sanjeev Kumar. *Structure of belladonna mottle virus at 5.5 A resolution.* IISc.

2. Sundaramoorthy, M. *X-ray diffraction and theoretical studies on DNA and ligand DNA interaction.* IISc.

Biochemistry

1. Baskaran, N. *The mechanism of interaction of o-amino-D-serine and other aminooxy compounds with sheep liver serine hydroxymethyltransferase.* IISc.

2. Chattopadhyay, Dipamwita. *Effects of cadmium interaction with*

intestinal epithelial cells and brush border membranes in relation to certain structural and functional parameters in animals. Calcutta.

3. Ghosh, Nilanjana. *Effects of certain rare earth metals on the operation of a few biochemical unit processes in the animal system.* Calcutta.

4. Kannabiran, Chitra. *Antibodies specific to dpG sequence-dependent binding to ds DNA.* IISc.

5. Kumudesan, N. *Studies on the biochemical effects of Cerbera odollam.* Kerala. Dr. P.A. Kurup, Gouri Sadan, T.C. 4/1236, Kowdiar, Trivandrum.

6. Latha, M.S. *Effect of nicotine on the metabolism of macromolecular components of the arterial wall.* Kerala. Dr. P.A. Kurup, Gouri Sadan, T.C. 4/1236, Kowdiar, Trivandrum.

7. Rajamohan, T. *Dietary protein and metabolism of lipids and connective tissue macromolecules.* Kerala. Dr. P.A. Kurup, Gouri Sadan, T.C. 4/1413, Kowdiar, Trivandrum.

8. Sriramarao, P. *Standardization, immunochemical characterization, cross reactivity and HLA association of Parthenium Pollen allergens.* IISc.

Microbiology

1. Gill, Satwant Kaur. *Studies on nitrogen fixation by genetic modification of rhizobia and plant cell/protoplast culture.* PAU.

Botany

1. Arumugasamy, K. *Studies in the nectaries of some Euphorbia complex.* Patel. Prof. J.A. Inamdar, Head, Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar.

2. Bhaduri, Tirtha Jyoti. *Soluble and organelle bound myoinositol synthase of plant origin. Visva-Bharati. Prof. A.N. Lahiri Majumdar, Department of Botany, Siksha Bhavana, Visva Bharati, Santiniketan.*

3. Biswas, Swadesranjan. *Studies on extra cellular xylanase production by a strain of A ochraceus isolated from soil.* Calcutta.

4. Bora, Tarun Chandra. *Studies on cellulolytic bacteria and fungi from soils under tea and the influence of some selected strains on degradation of herbicide sprayed weeds.* Gauhati. Dr. Balamani Bezbaruah, Sc-E(II) (Scientist), Head, Microbiology Section, Regional Research Laboratory, Jorhat.

5. Chattopadhyay, Ratna. *Studies on phytoalexin and plant antigens in relation to resistance of soybean, Glycine max (L) Merrill cultivars to anthracnose disease.* Calcutta.

6. Chetia, Minakshi. *Certain studies on disease reaction and enzyme substrate relationships in fruit tissues of Malus sylvestris (L) with reference to Alternaria tenuis infection.* Gauhati. Dr. D.N. Baishya, Prof., Department of Botany, Gauhati University, Guwahati.

7. Dan, Dalia. *Production of alkaloids and mutants in cultured cells of Periwinkle.* Calcutta.

8. Gautami, S. *Uptake of some heavy metals by crop plants and its relevance to human nutrition/health.* Osmania.

9. Geeta Rani. *Cytotaxonomic studies on some mosses of Western Himalayas with particular reference to the mosses of Dharamsala and adjoining areas.* Panjab.

10. Kiran Mai, K. *Chemotaxonomy of some Rubiaceae.* Osmania.

11. Kumawat, D.M. *Plant response against air pollution with special reference to heavy metals and sulphur dioxide.* Vikram. Dr. P.S. Dubey, Prof., Department of Botany, Vikram University, Ujjain.

12. Nayak, Sanghamitra. *Response to in vitro methodology and chromosome study of some Liliaceous taxa.* Calcutta.

13. Shaji, C. *Studies on algal flora and ecology of some polluted waters in Gujarat.* Patel. Prof. R.J. Patel, (Retd.), Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar.

14. Sudha Rani, T. *Genetical studies in induced mutants of Phaseolus Mungo L.* Osmania.

15. Sunil Kumar. *Studies on mycorrhiza of Picea smithiana (Wall) Boiss and Pinus gerardiana Wall.* HP.

16. Surekha. *Studies on the effects of some pesticides on growth and differentiation in two bluegreen algal species.* Panjab.

17. Tirlapur, Uday Krishna. *Contribution to the mechanism of morphogenesis in the meristems of Arachis hypogaea L. CV.* $DH_{3\text{-}30}$ *— A histochemical approach.* Karnatak. Dr. M.G. Panchaksharappa, Prof. (Retd.), Department of Botany, Karnatak University, Dharwad.

18. Vaidya, Muralidhar Bhimrao. *Study of mycoparasitic and entomogenous fungi of Maharashtra.* Shivaji.

19. Wadkar, Pratima Raghunathrao. *Studies in salt tolerance of Crotalaria L species.* Shivaji. Dr. G.B. Dixit, Department of Botany, Shivaji University, Kolhapur.

Agriculture

1. Damame, Hindurao Shamrao. *Response of sunflower, Helianthus annuus L. hybrids to graded levels of nitrogen and* phosphorus under rainfed conditions. *Marathwada Agrl. Dr. M.V. Dhobale, Agronomist, Dryland Agricultural Research Centre, Marathwada Agricultural University, Parbhani.*

2. Dashad, Shyam Singh. *Pollination studies on apple, Malus domestica Borkh, with particular reference to role of honeybees.* Y.S. Parmar. Dr. J.K. Sharma, Regional Horticultural Research Station, Bajaura District, Kullu, Himachal Pradesh.

3. Jain, Satynder Kumar. *Contaminated water treatment by aquatic plants: Studies in Azolla R.Br and Lemna minor.* IIT Delhi, Prof. (Mrs.) P. Vasudevan, Centre for Rural Development and Agricultural Technology, Indian Institute of Technology, Delhi and Prof. N.K. Jha, Department of Chemistry, Indian Institute of Technology, Delhi.

4. Muthusamy, S. *Studies on charcoal rot of soybean caused by Macrophomina phaseolina.* TN Agrl. Dr. V.R. Mariappan, Prof., Department of Plant Pathology, Director, (CPPS), Tamil Nadu Agricultural University, Coimbatore.

5. Ramanathan, S. *Studies on the effect of amendments, iron and phosphorus fertilization on rice in sodic soil.* TN Agro. Dr. G.V. Kothandaraman, Dean, Post Graduate Studies, Tamil Nadu Agricultural University, Coimbatore.

6. Ravishankar, G. *Studies on natural variation in Alnus nitida Endl and A. nepalensis D Don.* YS Parmar. Dr. P.K. Khosla, Director, Department of Extension Education, Dr. Yashwant Singh Parmar, University of Horticulture and Forestry, Solan.

7. Sarma, Hemanta Kumar. *Water use efficiency in autumn potato, Solanum tuberosum Linn under differential irrigation schedule.* HP Krishi. Dr. I.S. Chakor, Department of Agronomy, College of Agriculture, Palampur.

8. Sharma, Sumita. *Studies on the toxins of Beauveria bassiana (Bals) Vuill. parasitising gram pod borer, Heliothis armigera.* Durgawati.

9. Singh, Harinder Paul. *Epidemiology and management of Alternaria leaf spots of tomato in Himachal Pradesh.* Y.S Parmar. Dr. K.R. Shyam, Department of Mycology and Plant Pathology, College of Horticulture, Solan.

10. Somasundaram, S. *Non-formal agricultural education in dry farming through correspondence course: A critical analysis.* TN Agrl. Dr. G. Perumal, Prof. and Head, Department of Agricultural Extension, Tamil Nadu Agricultural University, Coimbatore.

11. Sreedhara, V.M. *Studies on the effect of triadimefon and S-3307 on growth and development of mulberry, Morus Spp.* Bangalore. Dr G. Boraiah, Prof. and Chairman (Retd.), Department of Sericulture, Bangalore University, Bangalore and Dr. M.P. Shree, Department of Sericulture, Bangalore University, Bangalore.

12. Sukhchain Singh. *Genetic analysis of some quantitative traits in Panicum maximum Jacq.* PAU.

13. Velu, V. *Studies on nitrogen balance in rice soils of Thanjavur.* TN Agrl. Dr. K.M. Ramanathan, Dean, Anbil Dharmalingam Agricultural College, Trichy.

14. Vinod Kumar. *Genetic analysis of reaction to yellow vein mosaic virus in Okra, Abelmoschus esculentus (L) Moench.* PAU.

Zoology

1. Bhadra, Utpal. *Transcriptive organisation and dosage compensation in trisomies of Drosophila.* Calcutta.

2. Dalip Kumar. *Taxonomic studies on some Indian Zygopinae with special reference to the external genitalia (Curculionidae : Coleoptera).* Panjab.

3. Datta, Prasun Kumar. *Genome organisation of some Indian amphibians.* Calcutta.

4. Dayakar, Y. *Investigations on the biology of the paddy field crab, Oziotelphusa senex senex Fabricius with reference to the reproductive cycle.* Venkateswara. Dr. K.V. Ramana Rao, Department of Zoology, Sri Venkateswara University Post Graduate Centre, Kavali.

5. Dube, Sudha. *Studies on certain endocrine tissues of a teleost fish in relation to its reproductive cycle.* Devi Ahilya. Dr. G.K. Dubey, Holkar Science College, Indore.

6. Ganeshan, V. *Effect of sewage and industrial effluents on water quality of rivers-Khan-Kshipra and the reproductive biology of fishes.* Vikram. Dr. A.K. Pandey, Prof., Department of Zoology, Vikram University, Ujjain.

7. Lakshmi Kumari, Keithireddy Veera Venkata Anantha. *Some aspects of toxic effects of the heavy metals, mercury and cadmium on the crab, Paratelphus hydrodromous Herbst (Crustacea : Brachyura)* Andhra.

8. Mangayya Chetty, Pulavarthi. *Systematics and some aspects of ecology of polychaetes around Visakhapatnam and Kakinada (East Coast of India).* Andhra.

9. Manne, Venkata Shantha Kumar. *Behavioural studies of some hymenopterous parasitoids on lepidopterous pests of chick pea and pigeon pea in relation to reproduction.* Shivaji. Dr. T.V. Sathe, Department of Zoology, Shivaji University, Kolhapur.

10. Prabhakar Rao, A. *Effect of central nervous system depressors on endocrine glands and their hormones in mammals.* Gulbarga. Dr. (Mrs.) S.B. Patil, Lecturer, Department of Zoology, Gulbarga University, Gulbarga.

11. Rama Murty, Mantha. *Studies on the flatfishes, Osteichthyes : Plenronectiformes from East Coast of India : Taxonomy, comparative osteology and phylogeny.* Andhra.

12. Santhosh Babu, P.B. *Studies on some aspects of reproduction in male Opisina arenosella Walker (Nephantis serinopa Meyr) (Cryptophasidae : Lepidoptera).* Kerala. Dr. V.K.K. Prabhu, Prof., Department of Zoology, University of Kerala, Kariavattom.

13. Sharma, Dharmendra Kumar. *Studies on the mechanism of inhibition of photosynthesis by diphenylether herbicides.* Devi Ahilya.

14. Singh, Chandrabhushan Prasad. *Effect of chromium on genetical systems of higher organisms.* Calcutta.

15. Soni, A.K. *Studies on the haemoytes of silkworm, B. mori (multivoltine race) in relation to post-embryonic development and cellular difference mechanism.* Vikram. Dr. J.P.N. Pathak, Prof., Department of Zoology, Madhav Science College, Ujjain.

16. Tamili, Dipak Kumar. *Taxonomy of aphidids : Aphids of Sikkim and Hilly areas of West Bengal.* Calcutta.

17. Venkateshwarlu, M. *Studies on the fresh water crab, Barytelphusa guerini with special reference to the pesticidal impact.* Gulbarga. Dr. S.A.T. Venkatachari, Prof. and Chairman, Department of Zoology, Gulbarga University, Gulbarga.

Medical Sciences

1. Adhikari, Anup. *Studies of the physiological aspects and physical performances of soccer players.* Calcutta.

2. Bhadra, Rupal Kumar. *Studies on the biotypes, serotypes and pathophysiology of camphylobacters recovered from pediatric diarrhoea in Calcutta, India.* Calcutta.

3. Chattopadhyay, Sisir Kanti. *Epidemiology of gestational trophoblastic disease.* Calcutta.

4. Lakshmi Reddy, P. *Biochemical and genetic studies in affective disorders.* Bangalore. Dr. B.S. Sridhara Rama Rao, Prof. and Head, Department of Neurochemistry, National Institute of Mental Health and Neuro Sciences, Bangalore; Dr. M.N. Subhash, Department of Neuro-Chemistry, National Institute of Mental Health and Neuro Sciences, Bangalore and Dr. S.M. Channabasavanna, Department of Neuro-Chemistry, National Institute of Mental Health and Neuro Sciences, Bangalore.

5. Padmanabhan Nayar, R. *Immunological and biochemical profiles in different types of cancers.* Calicut. Dr. C.K. Jayaram Panicker, 'Shanthi', 1/3736, East Hill Road, Calicut.

6. Padmashree, T.S. *Biochemical studies on trace elements in health and disease with special reference to neuropsychiatric disorders.* Bangalore. Dr. M.N. Subhas, Assoc. Prof., Department of Neuro-Chemistry, National Institute of Mental Health and Neuro Sciences, Bangalore and Dr. B.S. Sridhara Rama Rao, Prof. and Head, Department of Neuro-Chemistry, National Institute of Mental Health and Neuro Sciences: Bangalore.

7. Veeranna. *Studies on phosphoprotein and phosphoamino acid phosphatases.* Bangalore. Dr. K. Taranath Shetty, Additional Prof., Department of Neuro Chemistry, National Institute of Mental Health and Neuro Sciences, Bangalore.

INDIAN INSTITUTE OF SCIENCE
BANGALORE 560 012

REQUIRES

ASSISTANT PROFESSORS

In the Division of Electrical Sciences

QUALIFICATIONS AND EXPERIENCE:

Essential: A Doctoral degree with about 5 years research and teaching experience in any of the following areas:

"Underwater acoustic propagation/signal processing, Acoustic Imaging, Integrated Optics, Photonics, Photonic Switching, Coherent Optical Communication, Fiber Optic Sensors, Solid State Physical Electronics, Electronic Composite Materials, Electronic Device Modelling, Thick and Thin Film Devices, Microwaves and Antennas; Software Engineering, Artificial Intelligence, Robotics, Automated Manufacturing Systems and Control Theory; Parallel Computing-Hardware and Software, Computer Architecture."

Desirable: Publications in standard professional journals: Ability to undertake independent research and guide students at Ph.D./M.Sc. (Engg.) level.

Job Description: The Candidates selected are required to carry out independent research and guide students. Also required to offer courses in the board .discipline at the post-graduate level.

Emoluments: Rs. 5930/- p.m. in the scale Rs. 3700-5700.

RELAXATION: The requirements regarding number of years of experience is relaxable at the discretion of the competent authority in the case of candidates possessing exceptionally good record and outstanding capabilities.

It shall be open to the Selection Committee for a higher post to recommend a person for a lower post if a suitable candidate for the higher post is not available.

Details and prescribed application form can be obtained from the Registrar on request accompanied by an IPO for Rs. 10/- (free of cost for SC/ST on Production of Caste Certificate from a competent authority) drawn in favour of Registrar alongwith a self-addressed (Rs. 2/-) envelope of the size 28x18 cms. **on or before 17.9.90.**

R(IA)308-20/90 **REGISTRAR**

PUNJABI UNIVERSITY
PATIALA

Advt.No. 60/PRO/Rect. August, 1990

Applications for the following posts in the Department of Correspondence Courses are invited so as to reach the Deputy Registrar (Establishment) on or before **17.9.1990.** These posts are for the Self Financing Courses being run by the Department and are purely temporary. These would, however, continue subject to continuation of the courses:—

1. **PART-TIME LECTURER IN EDUCATION-CUM-CO-ORDINATOR:** One.
   (Rs. 1500+1000 (for Co-ordinatorship) p.m. fixed)
2. **PART-TIME LECTURER IN EDUCATION-CUM-ADDITIONAL CO-ORDINATOR:** One
   (Rs. 1500+500 (for Co-ordinatorship) p.m. fixed)
3. **PART-TIME LECTURER-CUM-CO-ORDINATOR LIBRARY SCIENCE:** One
   (Rs. 1500+500 (for Co-ordinatorship) p.m. fixed)
4. **PART-TIME LECTURERS IN EDUCATION:** Four
   (Rs. 1500/- per month fixed)
5. **PART-TIME LECTURERS - FOR POST-GRADUATE COURSES:** Two
   One each in Public Relations and Management of Public Enterprises. (Rs. 1500/- per month fixed)
   Note: Relevant subject will be Public Administration/Journalism.

Qualifications for All Posts:

As prescribed by the University Grants Commission for the post of Lecturer.

Desirable:

(a) Experience in Correspondence Courses, for all the posts.
(b) For posts 1 & 2: Teaching Experience in a Teachers' Training College.
(c) For post 3: Teaching experience as Lecturer in Library Science/Administrative Experience as Assistant Librarian in a University.

Relaxation:

(i) If no suitable candidates are available for posts No. 1 and 2, persons retired from the Teachers Training Colleges can also be considered.
(ii) If no suitable candidate is available for post No. 3, retired Lecturers in Library Science/Assistant Librarians of Universities, having Administrative experience can also be considered.

NOTE:

1. It is not obligatory to call for Interview every candidate who possesses the essential qualifications.
2. Candidates must possess working knowledge of Punjabi.
3. The Selection Committee might relax the qualifications/experience in exceptional cases.
4. Qualifications will be supplied alongwith the application form.

APPLICATION FORMS can be obtained from the Head of our Publication Bureau on payment of Rs. 15/- at the counter OR by sending IPO for Rs. 15/- in favour of the Registrar, alongwith a self-addressed envelope (25x10 cms.) with postage worth Rs. 10/- superscribing on it APPLICATION FOR THE POST OF ....

REGISTRAR

SOUTH GUJARAT UNIVERSITY
UNIVERSITY CAMPUS, UDHNA-MAGDALLA ROAD,
POST BOX NO. 49, SURAT-395 007.

Applications are invited in the prescribed forms (in eight copies for the following posts of Lecturers in the Post-Graduate Departments of the University in the pay scale of Rs. 2200-4000.

Sr.No.	Name of the Department	Post
1.	Economics	(i) One Lecturer (Temporary Post) in Econometrics-Specialization in International Trade desired. (ii) One Lecturer (Permanent Post) International Trade and Public Finance.
2.	Linguistics	(i) One Lecturer (Syntax) (Temporary Post)

The benefits of Contributory Provident Fund, Gratuity, Leave Travel Concession and Medical allowance etc. are admissible to the permanent post, but the temporary posts will not be eligible for such benefits.

Information about qualifications and eight copies of application forms prescribed for these posts can be had from the undersigned on payment of Rs. 15/- in cash or by Postal Order alongwith self-addressed envelope of 29 cmx13 cm size with stamps worth Rs. 5/- Paise affixed thereon.

The last date for receipt of application is **25-9-1990.**

Surat
Dt. 17th August, 1990

N.K. Desai
Offg. REGISTRAR

Ministry of Human Resource Development
(Department of Education)

GERMAN ACADEMIC EXCHANGE SERVICE FELLOWSHIPS 1991-92

Applications on plain paper as per prescribed format are invited from Indian nationals, residing in India, for the award of 10 (ten) Fellowships offered by the German Academic Exchange Service of the Federal Republic of Germany for advanced studies/research at Universities/research Institutions in the Federal Republic of Germany and in Berlin (West) for 1991-92. ONLY THOSE EMPLOYED AND SPONSORED CANDIDATES ARE ELIGIBLE, whose employers undertake to re-employ them on their return from FRG.

2. **Subject Fields:** Engineering and Technology; Agriculture; Horticulture and Forestry; Veterinary Science and Animal Husbandary; Sociology and Economics.

3. **Minimum Qualifications:** Uniformly good academic record with 60% or more marks at Master's Degree in the subject concerned or in related field. Candidates from the fields of Sociology and Economics should possess adequate knowledge of the German language also. (Conversion formula should be given where grades have been awarded by a University/Institution).

4. **Professional Experience:** Candidates should have at least two consecutive years practical training/research/teaching experience as on 1.7.1990 after acquiring the required academic qualification. Successful completion of M.Phil will be counted as one year's experience.

These fellowships are open to those who are from the staff of Universities/Institutions deemed to be Universities/Institutions of National Importance, Indian Institutes of Technology, Indian Institutes of Management etc. as also from Agricultural, Veterinary and Forestry institutions.

There is a possibility of Sandwich Model. The 'Sandwich Model' is a multi-phased fellowship scheme within which an applicant can carry out his research alternately in India and in the Federal Republic of Germany under the supervision of an Indian as well as a German guide according to a schedule previously drafted out in consultation with them.

The salient features of this new scheme are:-

i) The research stay in the Federal Republic of Germany is not limited to a single visit; the fellowship holder could either complete his research at a German university/institute in one stage or carry out part of the work there, return to his home institute to continue the work and later visit Germany again, if required. ii) Visit of Indian supervisor to the German University/institute for consultation while the Ph.D candidate is working there, if required. iii) Visit of the German guide to India for consultation, if required. iv) Applicants for 'Sandwich-Model' Fellowships are required to drift out their Ph.D projects keeping in view the objectives and guidelines of the institutions where they are employed.

The candidates are also required to furnish documentary proof (recent dated letters from German Professors) of contacts established with German institutes/universities for carrying out the proposal research work in Germany.

The fellowships will be awarded for advanced studies and research work and in principle not for obtaining a degree in Federal Republic of Germany. Scholars working for their Ph.D except those applying under the Sandwich-Model are therefore advised to complete their doctorate thesis before their departure for the federal Republic of Germany.

5. **Age limit:** 32 years, as on 1st January, 1991 with two years relaxation in the case of Scheduled Caste and Scheduled Tribe candidates who are considered to be extra ordinarily brilliant.

6. **Duration:** One academic year with effect from Octobeer, 1991 with possibility of extension. The period of Fellowship will be preceded by a compulsory four months German language course to be conducted at one of the branches of the Geothe Institute in the Federal Republic of Germany.

7. **Value of Fellowship:** a) Maintenance allowance at the rate of DM 1490 per month. b) Free passage from New Delhi to the place of study in the Federal Republic of Germany and back. c) Exemption from payment of university fees. d) Special clothing allowance of DM 400. e) Baggage allowance of DM 150 each way. f) Additional allowance of DM 200 per year. g) Book allowance of DM 200 per year. h) Allowance for charges for compulsory health insurance DM 600 per year. i) Free tuition, boarding, lodqing plus pocket allowance during the period of the German language course (preceding studies/research).

Note: (1) The following documents must be attached with the applications (including Advance Applications, if any); (a) Attested copy of the certificate certifying the date of birth (b) Candidates belonging to SC/ST must attach a copy of certificate to this effect (c) Attested copies of marks sheet of the qualifying examination (d) Attested copies of all degrees/diplomas/certificates etc. (e) A clear and precise programme of study/research in Federal Republic of Germany (f) A recent passport size photograph of candidate to be affixed on the prescribed application form (2) Application in the subject fields other than those specified above will not be considered (3) Candidates who have already been abroad for study/specialisation/training either on a scholarship or on their own are eligible to apply only if they have been in India for at least three consecutive years after their return from abroad, (4) Applications of candidates who are at present abroad, will not be considered (5) (a) candidates having contacts will German Professors/placements at the German Institutes will be given preference. Photocopies of letters from German Scientists/Professors confirming that the proposed research project could be carried out at their institute under their guidance are to be furnished in this regard. The GAES New Delhi office will help the candidates by providing addresses of German Universities/Institutes so that candidates could enter into correspondence, if any. (b) Candidates from the fields of Sociology and Economics should possess adequate knowledge of the German languages (6) Candidates Should have sufficiently good knowledge of India and the Donor country (7) Applications/Advance application which do not contain any of the required documents will be treated as incomplete and will not be considered (8) No correspondence will be entertained with candidates not selected for interview/fellowship. (9) Canvassing in any form will be a disqualification (10) Candidates must send their application fully sponsored by their employers. Advance application duly completed in all respects may also be considered provided the applications through employer is received subsequently. (11) Applications received after the prescribed date will not be entertained.

Candidates should apply for the above fellowships on plain paper (preferably typed) in the format given below, to **the Deputy Educational Adviser, Ministry of Human Resource Development, Department of Education, External Scholarship Division, Section ES-1, Room No. 516, 'B' Wing, Shastri Bhavan, New Delhi-110 001** latest by **28-09-1990.** Application received thereafter will not be entertained for consideration. Passport size photogragh duly signed in ink to be pasted on the right hand side of the application (without photograph application will be considered incomplete)

APPLICATION FORM

1. Scheme under which applied: ____________________
   Subject: .... Sub-suject: ....
2. Name in full as in passport Dr/Shri/Smt/Kumari (in capital letters).

(Surname) (First name) (Second name)

3. Name of father: ______________________

4. Name of the sponsoring authority and/or name of the authority which will employ you on return from abroad.

5. a) Date of Birth: b) Place of Birth:

6. a) Are you a citizen of India: b) State to which you belong:
 c) Are you a member of Scheduled Caste/Scheduled Tribe. If so, give particulars and attach certificate from the District Magistrate of your place of residence in support of your claim.

FOR OFFICE USE ONLY: A Q E

7. Address of the applicant with pin code numbers: i) Present/Mailing: ii) Permanent:

8. Particulars concerning Examinations passed commencing with Matriculation or equivalent examination (attach attested photocopy of each certificate/diploma/degree for record)

University/Board/ Institution	Examination passed with year	Class/Division	Percentage of marks & position if any	Subject taken

9. a. Details of papers published, if any:
 b. What you have been doing since last examination mentioned under Col. 8

10. a. Particulars of employment:

Office/Institution where employed	Date of Joining	Date of leaving	Post held	Monthly salary	Nature of duties

(b) Have you any contract obligation with your employer? If so, furnish details.

11. a) Knowledge of foreign languages, if any (attach proof if possible)

Skill		Very good	Good	Fair	Nil
Comprehension	Spoken, Written				
Expression	Speaking Writing				

12. Nature of proposed programme of study/research:
 a) Field of Study Main subject: Sub subject:
 b) Scholarship/Fellowship desired for:
 Training/Specialisation: Doctoral study/research: Post-Doctoral study/research:
 c) Name of the Institution (if known) where admission/training is desired (in order of preference).
 d) Are you willing to accept a place at some other institution if the appropriate scholarship agency recommends it?
 e) Have you already approached any University or University Professor in the country in which you intend to study? If so, give name and results.
 f) Degree sought, if any:
 g) Give separately in extra sheets, brief statement in about 100 words each about:
 a. The work engaged in b. Nature, programme of study/research desired.

13. Future prospects after studies/research.
 a) Plan for the future b) How are these related to the technical or economic development of the country?

14. a) Have you applied for any other scholarship in the last two years? If so, state the name(s) of the scholarships(s) and the subject of study/research proposed therein. Are you willing to be considered under any similar scholarship scheme involving study in another country? If so, which?
 b) If you had applied under this scheme previously please indicate the result.

15. Give below the names of two persons (they must not be related to you) who are in a position to testify from their personal knowledge as to your fitness for the proposed courses of study. They must be persons under whom you have worked or studied.
 i) Name with full address: ii) Name with full address:

16. Have you ever been abroad? If so, give the following particulars:

Country visited	Date of visit	Duration of visit	Purpose of visit	Scholarship received if any

17. Father's name (in full):
 a) Nationality: b) Occupation: c) Address:

18. In case you are married, please state:
 a) The name of your wife/Husband with full address: b) Nationality:
 c) Occupation (Please give designation with full address if he/she is employed)

19. Next of kin to be notified in the case of emergency (give name, address and relationship).

20. I hereby declare that the entries in this form and the additional particulars (if any) furnished in reply to the questions above are true to the best of my knowlege and belief.
 Place: Date:
 (Signature of the candidate)

21. I understand that if I fail to avail myself of this scholarship under any circumstances, the Government of India will not consider me for any scholarship being administered by them for a minimum period of atleast one year from the date by which this scholarship should have commenced.
 Place: Date:
 (signature of the candidate)

22. a) Certified that Shri/Smt./Km........................is employed by us/me. He/She has been working here as ____________ since ____________ and has been sponsored by us/me for study abroad.
 b) He/She will be relieved by me/us, if selected.
 c) I/We undertake that he/she will be permitted to join his/her department/organisation on return from study abroad. I/We will ensure that his/her terms and conditions of service i.e. salary, seniority, promotion, leave etc. will not be adversely affected on account of his/her absence and further that everything possible will be done to provide the scholar with work and conditions of service suitable to and commensurate with his/her qualifications/training obtained abroad.
 Place: Date:
 (Signature of Employer/Sponsoring Authority)
 Seal of office.

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ISSN—0566-2257

University News

MONDAY, SEPTEMBER 10, 1990 Rs. 2.50

West Zone VCs Conference

From L to R : Prof. V.C. Kulandaiswamy, VC, IGNOU & President, AIU, Prof. S.K. Agrawala, Secretary, AIU and Prof. K.K. Singh, VC, Jiwaji University.

No. F.7-1/90-RCEM/Estt/

REGIONAL COLLEGE OF EDUCATION
MYSORE-6

(National Council of Educational Research & Training)

ADVERTISEMENT

Applications are invited in the prescribed proforma for the award of two Junior Research Fellowships for the pursuit of advance study and Research in different areas of Education/Science. The following areas are considered.

1. Education of the disadvantaged groups—studies of policies and actions.
2. Curricular innovations in Teacher Training and School Education.
3. School effectiveness.
4. School curriculum and sociology of knowledge—ethnographic studies.
5. Educational Technology—Educational computing.
6. Evaluation and Examination reforms.
7. Population Education—Impact studies.
8. Science Education
9. Mathematics Education.

The fellowships carry a consolidated emoluments of Rs. 1800/- per month and are tenable for two years in the first instance.

Qualifications:

Applicants must have a good academic record throughout, preferably with a first class.

(i) Master's Degree (M.A.)/M.Ed/M.Phil in Education.

(ii) M.Sc/M.Sc Ed. in Physics/Chemistry/Mathematics.

(iii) Pass in the National Selection Test for JRFs conducted by the UGC.

Nature of work: The selected Junior Research Fellows will have to undertake work for Ph.D. Degree on an approved subject under the supervision of the members of the faculty of the College.

Age limit: Should be below 30 years. Relaxable by five years in the cases of SC/ST candidates.

Application forms may be obtained from the Principal, RCF, Mysore, by sending a self-addressed envelope with Re. 1/- (Rupee one) stamp affixed. Completed application forms alongwith attested copies of Certificate/marks cards, should reach the undersigned **within 15 days** from the date of advertisement.

PRINCIPAL

NATIONAL INSTITUTE OF HYDROLOGY
JALVIGYAN BHAWAN, ROORKEE

No. 9/90-NIH (Admn) **Dated: Aug. 29, 1990**

Applications are invited for the following posts in National Institute of Hydrology (A Government of India Society under Ministry of Water Resources), Roorkee from Indian Nationals satisfying qualification and experience laid down therefor. Four posts are for candidates belonging to general category and **two posts reserved for candidates belonging to Scheduled Caste.**

1. Scientist 'E': 6 posts (likely to be increased) in the following areas:

(a) Surface Water Hydrology .... 3 **(b)** Drought Studies................. 1
(c) Hydrological Investigation .... 1 **(d)** Atmospheric Land Surface Process Modelling 1

Scale of Pay: Rs. 3700-125-4700-150-5000. Total emoluments at the initial of the scale is Rs. 4890/- excluding HRA.

Age: Below 45 years.

Qualifications : ESSENTIAL : for Area (a) SURFACE WATER HYDROLOGY and **Area (b)** DROUGHT STUDIES: ME/M. Tech. in Water Resources/Hydraulics/Irrigation/Hydrology/Soil Water with 60% or 7.0/10.0 CPI in both BE/B. Tech. and ME/M. Tech examination.

For Area (c) HYDROLOGICAL INVESTIGATION: ME/M. Tech. in Water Resources/Hydraulics/Irrigation/Hydrology/Soil Water with 60% or 7.0/10.0 CPI in both BE/B. Tech. and ME/M. Tech. examination. **OR** Ph.D. Degree in Physics/Nuclear Physics with 60% or 7.0/10.0 CGPA in M.Sc. examination.

For Area (d) ATMOSPHERIC LAND SURFACE PROCESS MODELLING: ME/M. Tech. in Water Resources/Hydraulics/Irrigation/Hydrology/Soil Water with 60% or 7.0/10.0 CPI in both BE/B. Tech. and M.E./M. Tech. Examination. **OR** Ph.D. degree in Physics with 60% or 7.0/10.0 CGPA in M.Sc. examination.

2. At least 10 years experience in teaching research/design/investigation and planning of which at least 5 years experience must be at the Scientist 'C' or equivalent level (pay scale of Rs. 3000-4500) with proven ability of conducting and guiding research and with experience in handling applied research problems.

DESIRABLE: 1. Ph.D. in Engineering for Engg. post-graduate and post doctoral work for Ph.D. in Science. **2.** Publications in reputed national and international journals. **3. Corporate membership of professional, scientific and engineering associations/societies.**

NOTE: 1: Time spent on Ph.D. for Engg. graduate/post graduate shall be considered as experience upto a maximum period of three years.

NOTE: 2: The qualifications regarding experience is relaxable at the discretion of competent authority in the case of candidates belonging to SC/ST category, if at any stage of selection the competent authority is of the opinion that sufficient number of candidates from this community possessing the requisite qualifications are not likely to be available to fill up the vacancies reserved for them.

NOTE: 3: Selected persons can be appointed on deputation basis.

The above mentioned posts carry usual allowances as admissible under the Central Govt. rules. Age will be relaxable for persons, already in service in the Instt. and other Govt./Semi Govt./Autonomous Organisations as well as candidates belonging to SC/ST community, retrenched employees of Defence services and Physically handicapped persons, as per rules of the Govt. of India.

Age will be determined as on 15.10.90.

Persons already employed in Govt./Semi Govt./Autonomous Bodies should apply through proper channel. Applications not forwarded through proper channel may not be considered.

Application forms may be obtained by **25.9.90** from **Admn. Officer, National Institute of Hydrology, Jalvigyan Bhawan, Roorkee-247 667** by sending a self-addressed envelope of the size 12×28 cms. Application forms duly completed in duplicate with copies of all testimonials alongwith an application fee in the form of Indian Postal Order of Rs. 8/- (SC/ST candidates are exempted from payment of fee) payable to the National Instt. of Hydrology at the Roorkee University Post Office should reach the Administrative Officer, National Institute of Hydrology, Jalvigyan Bhawan, Roorkee-247 667 (U.P.) **on or before 15.10.90.**

JOB LOCATION: ANY WHERE IN INDIA.

21 SEP 1990
C.P.Y.

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

Crucial Issues in Higher Education

V.C. Kulandaiswamy*

Deemed Universities

We have, today, in this country around 180 universities and over 6500 colleges. Of these 180 and odd universities, many are unitary in nature and do not have affiliated colleges. The deemed to be universities also will not have affiliated colleges. If you leave all of them and consider only the affiliating universities, all the colleges are affiliated to these universities only. Even if we assume that there are 120 or 125 universities that are affiliating in nature, on an average, the number of colleges affiliated to each university will be around 55. This obviously is the average. In the case of some universities the number will exceed 100. We are now witnessing a situation where the universities whose main objective is creation of knowledge and communication of knowledge, are spending their time mostly to take care of the problems of the affiliated colleges and function as examining bodies. They are doing crisis management day in and day out and hardly devote much time to the promotion of research and improvement in quality in education and training. We need to find a solution by which the university system will be substantially free from being an examination body for the affiliated colleges.

The unitary universities and the deemed to be universities are really free from the problem of functioning as major examining bodies. They may have other problems, but that is a different matter. All over the world, the universities are of the unitary type only. We have the phenomenon of the affiliating universities only in India, Pakistan and Bangladesh.

In future our effort must be to establish unitary universities only, as and when we think of new universities. If there are strong centres of learning and if they have a good record of research and teaching at the postgraduate level, giving them the status of a University will enable them to have greater freedom and financial support for pursuing their teaching and research activities. Conferment of this privilege selectively will do good to higher education in this country.

Teachers' Role

There is another associated subject that I should address myself here. We have today nearly 2.5 lakhs of teachers employed by the colleges and university departments in India. Among them only an insignificant number is involved in the preparation of curriculum and syllabi of each university. The bulk of the teachers happen to mould their teaching to suit the curriculum and syllabi prepared by others. The students are admitted by the administration, the question paper is set by some one outside, valued by someone else and the result is published by the university.

[Based on the address delivered at the Conference of Vice-Chancellors of Western Region held at Jiwaji University, Gwalior on 11th August, 1990.]

**Vice Chancellor, Indira Gandhi National Open University and President, Association of Indian Universities.*

Consequently, most of the teachers in the college are reduced to the level of mere tutors. There is not much a difference between an affiliated college and a tutorial college. In some states, the tutorial colleges are now called parallel colleges. It is true, since our colleges are, in essence, no better than they. In fact, they take care of those students, whom we could not teach well enough to help them pass. This is not a very enviable situation for the academic community.

There is another dimension to this problem. We have been demanding that the educational programme must be relevant to the needs of the society. This would require that the community of teachers in every college takes interest and assess the manpower needs periodically both in terms of the region and the country and frame the curriculum and syllabi to meet these needs. Unfortunately, the bulk of the teaching population is not directly involved in syllabus formulation and therefore they teach what has been prescribed. Excepting the classroom teaching, they hardly play any leadership or participatory role. So the system of affiliated colleges and affiliating universities, by and large, deprives the members of the teaching community the rights and privileges enjoyed by their colleagues in advanced and also in developing countries. Except for our neighbours, Pakistan and Bangladesh, in no other countries does the system of affiliated colleges exist. This system is doing great harm to higher education and we have to find a way to ensure that our universities free themselves as far as possible from these constraints.

Academic Autonomy

It is necessary that teachers should have a say in syllabus formulation, in instruction, in setting papers and in valuing the answer scripts. This is possible if every college is made a university and if we introduce internal evaluation. Such a step would be considered too drastic and the suggestion is not a practical one. As such other possible strategies will have to be discussed. The only other alternative is to grant academic autonomy to the colleges. They will formulate the syllabus and curriculum, set question papers, conduct examinations and communicate the results to the universities which will ultimately award the degree. This is what has been contemplated in the autonomous college concept by the Kothari Commission. Some of these colleges may eventually become Deemed to be Universities if they can shed, undergraduate courses and strengthen postgraduate education and research. This is extremely desirable. Tamil Nadu has given autonomy to about 40 colleges and neither the colleges nor the universities resent this step.

An institution may have academic autonomy and administrative autonomy and financial autonomy. We are only talking about academic autonomy which enables the teachers to play a larger role in higher education and allows the student to study on a continuous basis gaining by the weightage given to internal evaluation and thereby reducing the importance of the final examination and the need for feverish preparation in the last minute. It is surprising that this step which gives the teachers the right and responsibility, enjoyed by their colleagues all over the world over a long period of time has been termed by some as 'elitist'. It needs to be examined if there is anything elitist in this reform.

We confer this privilege by a process of selection on deserving institutions, which opt for such a status. If selection of either individuals or institutions on the basis of prescribed criteria is considered 'elitist' then no competitive selection is possible. Every centre of excellence can be condemned as elitist. The concept of autonomous college is a healthy process of decentralization and the earlier we do it, the better it is. Our aim must be to have as many colleges as possible under this category. Some are afraid of this system being abused. Every abuse exists today in higher education. We need not fear of any new abuse. As mentioned earlier, there are over 40 autonomous colleges in Tamil Nadu. Nothing catastrophic has happened. They are popular.

Student Discipline

In institutions where we have the semester system and continuous assessment, the discipline is good. It is not because the students fear the staff members and behave well, but because in that system they have to keep themselves busy most of the time and an atmosphere of seriousness automatically develops. In such a situation the problem of indiscipline is never so acute.

The discipline in a campus depends on the image and prestige of the head of the institution and the heads of departments. Over a period of time we have progressively undermined the status of the heads of institutions. Consequently, they are not able to enjoy the esteem of the students and exert much influence on the student community. We need a series of reforms to bring about an improvement in the situation.

The Principals of colleges and Vice-Chancellors of universities enjoyed more autonomy and greater prestige and status, before independence than they do now. In all the advanced countries, whether the

(Contd. on page 6)

Public Relations Education and Service in Higher Education Sector

Perspectives and Prospects

A.N. Rai*

Amidst the plethora of problems which the country is confronting today, the problem of systematic proliferation of Public Relations Education and Service as a single entity subject in the field of higher education has remained, indeed, been *a terra incognita*. This most fertile and yet untrodden field, is undoubtedly of far reaching significance. In a dynamic, growing society, where the new knowledge, techniques and processes are emerging as a challenging task for their proper utilisation in acquiring the optimum excellence in the maintenance and coordination of standards in higher education, the need for introducing the Public Relations Courses at the Bachelor and Postgraduate degree levels is genuinely felt with the objective to augment public relation courses, manpower, services, training, information, communication, research, basic source materials, and literature etc., on scientific lines. The time is opportune for an expertise cadre of public relations to be generated in the field of higher education so that the available resources are marshalled together in accruing the maximum benefits to the potential users.

Before going into the present status of public relations education, services and research in higher education sector, it would be pertinent to delineate briefly the genesis and the terminological significance of University Public Service (UPS). Lowe has pointed out that University Public Service represents "a close tie up of the university with national problems and extension of university instruction and consultation services to the people."[1] The UPS has the advantage of having no historic ties to a single school, college or discipline. It broadly encompasses a vast gamut of services associated with higher education sector, i.e. university development, continuing education, educational extension, as well as the growing fields of external degrees and research programmes etc. etc. The public services clientele are not confined to the adult category, but they are rather identified as full time residential candidates for a regular degree. The monolith of higher education primarily rests on the pillars of its rich educational resources including textbooks meant for the different curriculam taught in the universities. There is an acute shortage of standard published literature in the areas of educational public services. The public services in universities primarily rest on the production, storage and retrieval of knowledge manned by well trained staff with responsibility to disseminate information relating to the developed areas of university curriculum, developmental programmes, fellowships, computer facilities, scholarships, book banks, film shows, cultural and literary activities, job-employment, entrepreneurship courses, technical courses, off campus university programmes, faculty improvement programmes, sports and physical education, national and international seminars, conferences and workshops, adult and continuing education, correspondence course, COHSIP, and COSIP programmes, statistical and publication programmes, summer vacation programmes, CAS, SPA and DSA programmes, university museum, libraries and study centres of higher research, autonomous colleges, scheme of major and minor research projects in universities, research associateship, student amenities, study centre, health and pedogogical facilities, distance education, facilities to SC and ST, remedial coaching centres etc. etc. Thus, the scope of university public relation services is of extremely variegated nature whose success lies in identifying the needs of actual clientele i.e. beneficiaries or users. According to the International Congress of University Adult Education, the classification of University Public Relations Service can be categorized into remedial, vocational, technical, professional, health, welfare, civic, political, community, competence and lastly, self fulfilment objectives.[2] John E. Dolibouis rightly remarked that "the university campus is the ideal training ground for young people interested in public relations as a career".[3]

Promotion of Public Relations Education

The subject of Public Relations is being taught as one of the subjects at the B.A. level in South Gujarat University, Surat since 1967.[4] The course of public management is offered at MA level at Madras University.[5]

**Principal Information Officer,*
University Grants Commission,
Bahadur Shah Zafar Marg, New Delhi-110002.

The Public Relations Society of India, Hyderabad, public and private organisations and the Indian universities have been streneously promoting the public relations education, training and research in the country. Although the public relations education and services have received a worldwide recognition, in India this subject is taught alongwith a major subject of journalism and mass communication.

Conceptually, the public relations is an art of cultivating proper interaction with the community through the process of generating sustained human understanding between an organisation and its public for promoting the goals of the organisation, its image building, extending services to its beneficiaries with a sense of commitment. New strategies are needed for the exclusive promotion of public relation services. Obviously, it involves behavioural services, psychological motivation, systematic management techniques, research development, and information built-in process, all marshalled towards achieving the cherished goals of academic excellence, self-sufficiency, mutual cohesion, national integration, development and the purposeful use of knowledge with its all pervasive richness. Edward Bernays held that the public relations counsel is infact a public relation practitioner pledged with the deep sense of professional competence and code of ethics.

Western Trend

The trends in public relations educations and training in Western countries reveal the following striking features: Firstly, it was taught both at undergraduate and graduate levels. Secondly, it was taught at postgraduate level in the universities. Thirdly, public relations as a part subject was incorporated in the major subject of journalism and mass communication. Fourthly, it was taught by the educational institutions, universities, private and public sector undertakings.

Indian Scenario

In India, barring few institutions like Bharatiya Vidya Bhawan, Rajendra Prasad Institute of Communication and Management (Bombay), Indian Institute of Mass Communication, (New Delhi) and few private institutes, most of the Indian universities are offering the public relations education as one of the subjects of their major subject area of journalism and mass communication. Public relations as a single entity subject was taught at South Gujarat University (Surat) at B.A. level and at Madras University as a single subject at a M.A. level. To say the least, hardly any justice is done to the subject of public relation education in India. Though there is an increase in the subject of public relations education in quantitative terms, its qualitative richness has been absolutely ignored even in the wake of newly emerging technology transfer, information explosion and systematic harnessing of rich knowledge. The need to attribute a new thrust to the public relation education and training as a single entity subject, is therefore a clarion call of the day. The university sectors can potentially enrich this untrodden subject by introducing public relations as an exclusive subject at B.A. level and at postgraduate level conforming to the needs of the students, faculty members, management, parents and national educators, planners and policy programmes.

The first concerted endeavours were made by eminent educationists like Prof. G. Ram Reddy and Prof. C.N. Reddy, former Vice-Chancellors of Indira Gandhi Open University and Andhra Pradesh Open University respectively by embarking upon a laudable dream of introducing the first postgraduate degree course in Public Relations in the Andhra Pradesh Open University. The feather cap of success goes to above pioneers. Andhra Pradesh Open University was the first university in India to introduce a Postgraduate Diploma in public relations on 31st October, 1986.

In nutshell, the public relations courses in India have to be revitalised in the light of emerging needs of higher education sector and should also demarcate the line of activities differing with those of general public relations courses. This is essential since the scope of public relations activities in higher education sector are quite enormous in its totality. Public relations is a concerted endeavour to generate a favourable climate of healthy impression and mutual cohesiveness of faculty members, students, management and extends a harmonized blending among the off campus institutions. Public relation interprets the set-in goals of the higher education. All possible avenues are required to be streneously explored in the achievement of conscious development of positive attitudes and appreciation towards the universities' accomplishments, as well as the impediments coming across their development. All activities of public relations in the higher education sector should operate within the orbit of formal and non-formal structures. The academic excellence and effective maintenance and coordination of standards in higher education can be achieved only by the effective and explicit will of the people for their absolute participation in the universities' academic programmes i.e. academic, literary, cultural and welfare programme etc. etc.

Advertising and publicity will be an important vehicle of placing the public relation activities on a stronger foothold in the higher education sector. Attractive pamphlets dealing with different curriculum programmes, facilities and aims and objectives of universities etc. should be lucidly drafted bilingually i.e. English and Hindi or regional language in universities so that the information flow may be maintained among all expected users.

The Role of UGC

Appreciating the need of promotion of public relations in higher education sector, the University Grants Commission (UGC) has constituted a panel on the introduction of public relations courses at graduate and postgraduate levels. Its recommendations are under active consideration of the UGC. The model syllabus and guidelines for the preparation of such syllabus are yet to be finalised. UGC has rightly conceived that like journalism, public relations also found a new leaf in its history in the post independence era. As a result of socio-economic changes, technology transfer, scientific advancement, all round knowledge explosion, and sense of pledging loyalties towards constitutional obligations, rights and duties, the people have now been considerably enlightened. Because of people's right to freedom of speech and directive principles of state policy enshrined in the constitution enjoining the states to secure for their citizens the right to education, livelihood, an enlightened Indian personality is emerging. This personality is emerging with "right to information by imposing an obligation on the authorities the duty to communicate" about the information required by them. This is a striking feature of people's will to grow and to develop in a democratic society. It is in this background, the role of information and public relations education and training is envisaged in higher education sector. A partial fulfilment of these goals is already underway by the successful ongoing programme of public relations courses entwined with journalism and mass communication in Indian universities.

The public relations education and training in Indian universities would be crippled without the aid of media activities i.e. T.V., Radio etc. Although, the Ministry of Information and Broadcasting is the only governmental agency for promoting the electronics media and information network services, yet it is baffling, indeed, to point out, that public relations qualifications are not considered essential for entry into the government cadre of information services.

As a sequal to the New Education Policy, it may be appropriate for the universities to introduce the need-based professional courses like public information, public relations, advertising and communication at the degree and postgraduate degree levels. The manpower thus created by these professional courses in the universities will be quite capable of feeding the government, public and private sector organisations including universities in streamlining the public relations education and training in the country.

The conglomeration of three courses, i.e. Journalism, Public Relations, and Advertising constitutes three different segments, which are incorporated in the major courses of Journalism and Mass Communications being taught in Indian Universities. As these three are different professions, the present combined courses can hardly do any justice in developing the professional expertise in any of the fields. It can neither produce a good journalist nor a successful public relations practitioner. No university except the Indian Institute of Mass Communication has so far started an exclusive course in Information and Public Relations discipline. The Andhra Pradesh Open University is the first university which has achieved a pioneering success in introducing the postgraduate diploma in Public Relations for which about 5,000 applications are received every year. This reflects the high demand for this untrodden field. Further, approximately 50% to 60% existing information and public relations personnel would be retiring within the next 10 years. It is, therefore, essential to look forward to fill up the vast anticipated gap by creating a parallel contingent of public relations experts in the country through the newly envisaged public relations education curriculum and training in the Indian Universities. The content of such courses should have direct relevance to national development, integration, socio-economic and national needs, rural reconstruction, family welfare, employment, entrepreneurship, training, fellowship etc. Since New Education Policy further lays stress on the vocationalisation of education, it is high time when the stage should be set for the launching of an exclusive course in Communication, Information and Public Relations.

Research, Monitoring and Evaluation

In the absence of proper monitoring and evaluation of public relations education and training in universities, it would not be possible to identify the gaps, weaknesses in systems and its total impact on the government and other organisations. This feedback will help the government in the formulation of its education policy, and its effective stage by stage assessment. This will facilitate further restructuring of courses of public relations education and training by the Universities in the years to come. In today's world of avalanching change with information technology etc., people are more alive than ever before of the need to know, of the need to be aware, and of the need to communicate.

Action Plan

To achieve the desired results in promotion of public relations education and training, the following action plan is proposed:

1. Institutionalisation of fellowships associateships etc., in Public Relation Education and Training in Indian universities.
2. Keeping in view itsw relevance to administration and industry, the MBA course should be restructured by incorporating public relation education as a paper.
3. To strive for uniformity in public relation syllabi in universities.
4. Staff, equipment and literature should be provided in strengthening public relation activities in universities.
5. Launching in-service training programme.
6. Ensuring professional independence.
7. Incorporation of public relations education and training in cultural exchange programmes between India and other countries.

Prof. Bashiruddin rightly sums up that "It is only through such cross fertilization of ideas and professional interaction that any innovative, socially relevant and professionally sound communication and Public Relations courses with optimal training inputs and research direction can be evolved. We must rise above diplomas and unstructured correspondence courses and mature towards excellence in seeking the frontier of expanding awareness of communication and behavioural sciences that would truly make the science of Public Relations a profession".[7] The introduction of public relations education and training in the university sector will expenditiously accentuate the overall national growth and development. □

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Crucial Issues in Higher Education

(Contd. from page 2)

Governments be capitalist, or socialist or a monarchy the Vice-Chancellors and Principals have a status, much higher than what we have in India.

An institution is as good as the one who heads it. An educational institution is not a matter of buildings, equipment and books. It is a matter of the men and women associated with it. It is the head of the institution who co-ordinates, who leads, who motivates, and inspires. We have not devised a system that is so capable in itself that it can function efficiently irrespective of the quality of leadership. That being so, the progressive erosion of the image and standing of the heads of institutions has done incalculable harm to education. The position that has suffered most is that of the Vice-Chancellor. What has been happening in Bihar for quite sometime and some of the recent developments in U.P. leave us very sad. Enmasse removal of Vice-Chancellors, and seeking to remove Vice-Chancellors without assigning any reason are steps that would bring down the image of the whole University system in the country. These are not worthy of a cultured society. We follow a vigorous process of selection, for the Vice-Chancellors the term after all is for three years: there is a syndicate or executive council sitting above him as an all powerful body and then again there is the Chancellor. With all these checks and balances why should there be a case for removal of a Vice-Chancellor without following the course of natural justice? A post that is held in highest esteem in advanced countries is sought to be treated in a very crude way. It does not augur well for higher education. Imagine the plight of an administrative and academic head of a University, who may expect to be asked to step down any moment, without assigning any reason.

If we are to resist, such measures effectively, there is also need for a code of conduct for the Vice-Chancellors. We must impose on ourselves a discipline that we would strictly follow. A small community can exert an influence only on the basis of its moral strength. We can depend on no other strength.

The AIU must also examine its rules of recognition of universities for membership. We must make it a point that if the universities have offensive provisions in the Act or in the Statutes, the AIU should insist upon a change of these provisions, as a condition for recognition or continuance of recognition. □

West Zone Vice-Chancellors Meet at Gwalior

The Vice-Chancellors of West Zone Indian Universities met at Jiwaji University, Gwalior on 11th August, 1990. Shri M.L. Jain, Vice-Chancellor, Dr. Hari Singh Gour Vishwavidyalaya, Sagar presided over the meeting. The meeting was attended by Dr. K.G. Deshmukh, VC, Amravati University; Prof. (Mrs) Sushila Vyas, VC, Banasthali Vidyapith; Prof. S.N. Sinha, VC, Rajasthan University; Dr. D.K. Sharma, VC, Jawaharlal Nehru Krishi Vishwavidyalaya; Prof. S.K. Chauhan, VC, Vikram University; Dr. S. Venkateswaran, Director, Birla Institute of Technology and Science; Prof. K.K. Singh, VC, Jiwaji University; Dr. R.P. Bambah, VC, Panjab University; and Prof. R.P. Rastogi, VC, Banaras Hindu University. Barkatullah University, Bhopal and Devi Ahilya University, Indore were represented by their Rectors, Prof. M.G. Paithankar and Dr. R.D. Agarwal respectively. The meeting was also attended by Prof. V.C. Kulandaiswamy, VC, Indira Gandhi National Open University and President, AIU, Prof. S.K. Agrawala, Secretary, AIU, Dr. D.K. Dasgupta, VC, Bidhan Chandra Krishi Vishwavidyalaya (Member Standing Committee, AIU) and Prof. M.K. Prashad, Pro-Vice-Chancellor, Calicut University.

A number of topics of mutual interest to the universities in the region came up for discussion.

(i) Regional Centres of UGC

The question of establishment of regional centres of the University Grants Commission (UGC) was deliberated at length. While some members favoured the proposal specially for alleviating the problems of the small and far off universities, others were apprehensive that these centres might only function as middlemen as also tell upon the all India character of the Commission. There was however a general consensus that the creation of the regional centres would facilitate prompt allocation and disbursement of funds by the UGC to the universities in general and institutions located in remote areas in particular. The meeting requested the President, AIU, to nominate a committee of Vice-Chancellors which could examine the proposition in depth and suggest functional modalities of these regional centres. This could then be taken up at the next annual meeting of the Association of Indian Universities.

(ii) Recognition Under Section 12-B of UGC Act

The difficulties encountered in getting recognition for a university under Section 12-B of the UGC Act were examined. It was suggested that the UGC be requested to show urgency in sending assessment teams to report on respective universities for recognition under Section 12-B of the UGC Act.

(iii) Improving Library Facilities

A forceful plea for improvement of library facilities in the universities was made by the members. The meeting was apprised of the projects assigned to various universities for coordinating library dissemination programmes in groups of disciplines. The members were also informed of the negotiations now under way by the UGC for financing projects like INFLIBNET which will connect all universities to a centralised library facility. The UGC also proposed to take up copyrights of certain journals of important societies that will enable it to circulate copies of these journals to the member universities. It was suggested that such schemes as were in progress both at UGC and AIU levels regarding dissemination of library information amongst the universities and various other institutions should be

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Women's Studies Programmes and Women's Organisations

The Association of Indian Universities (AIU) is preparing a Directory of Women's Studies Programmes and Women's Organizations in India in collaboration with the Commonwealth of Learning (COL), Vancouver, Canada. The Association invites all such organizations working in any part of the country to get in touch with the Secretary at the following address for their inclusion in the proposed Directory:

The Secretary
Association of Indian Universities
AIU House
16 Kotla Marg
New Delhi 110 002

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widely publicised.

(iv) Human Resource Development

The meeting lamented the lack of orientation and training programmes for university administrators. It was noted that AIU had organised training programmes for administrative staff in a small way. It was also brought to the notice of the house that the Panjab University, Chandigarh regularly arranges several such programmes. It was suggested to request the AIU and the UGC to create further training facilities for training of administrative and ministerial staff of universities. It was particularly pointed out that class III and class IV employees should not be relegated out of such programmes.

As regards disparities in the pay scales of the ministerial staff, it was suggested that the Madhya Pradesh model wherein the ministerial staff of universities had been brought at par with other government employees in the state should be adopted by other states too.

(v) University-Industry Linkages

The question of establishment of university-industry linkages also came up for discussion. Apprehensions were voiced about the feasibility of such schemes in traditional universities and their capacity to generate funds through such collaborations. The meeting was apprised of the decision that whatever funds a university or institution earned out of such services, should be retained and used for the development of the institution or the university.

(vi) Examination Reforms

While discussing examination reforms to enhance their relevance, it was suggested that the system of holding separate examinations for private students as evolved by the Panjab University could be adopted by other universities. It was also opined that to ease pressure on organisation of examinations of regular students, maximum use be made of the open learning system which has been introduced by several universities.

(vii) Student Indiscipline

The meeting also addressed itself to the problem of indiscipline in educational institutions. Experiments at some universities in improving discipline and promotion of a better academic atmosphere were noted. It was suggested that students should be organised into constructive bodies with functional units like debating societies, dramatic clubs, fine arts societies and sports and academic unions etc. It was however, felt that elections to students unions was however a very sensitive matter which would have to be sorted out by the Vice-Chancellors taking in view various characteristic factors and local conditions. It was therefore not thought feasible to lay down any specific guidelines on the subject.

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto **15th October, 1990** for the post of **Director** in the Council's Institute of Immunohaematology, Bombay.

This Institute is engaged in research in Immunohaematology with an objective of improving National Blood Banking Services. It is recognised as a WHO referal Centre for SEA and advises Govts. on quality control for serology reagents. The Institute has been responsible for initiating major research programmes in Immunohaematology and has been an important training Centre for medical and paramedical personnel. It is also an AIDS Reference Centre of the ICMR. The Institute has acquired adequate modern equipments and other infrastructural facilities for conducting its activities.

Qualifications & Experience: (i) M.D./Ph.D./D.Sc., in Medicine/Pathology/Microbiology/Public Health or related disciplines or equivalent postgraduate qualifications with research experience of 15 years with original work to the credit of candidate. (ii) Administrative experience in a respective capacity. (iii) Knowledge and experience in research in Immunohaematology & Blood Banking Services.

Job Requirements: The Director is expected to provide high level leadership in identification, formulation and implementation of R & D Programmes and projects of national importance in Blood Transfusion Services & Immunohaematology. He/She is expected to develop fruitful linkages with academic, and professional institutions, Governments and international agencies. He will have the over-all responsibility for the working of the Centre within the framework of the ICMR System and for ensuring an atmosphere conducive for creative work.

Salary/Conditions of Service: The scale of pay attached to the post is Rs. 5900-200-6700 plus allowances as per Central Govt. Rules, including a Non-Practising Allowance of Rs. 950/- p.m. for medical graduates only. Privates practice is not allowed. Benefit of pension admissible. Higher initial pay can also be considered. Free medical aid and leave travel concession are also permissible for the employees and his family as per Govt. rules.

Age: Below 50 years. SC/ST candidates allowed relaxation in accordance with Govt. of India Rules.

Educational qualifications relaxable in the case of candidates otherwise well qualitied. Benefits of pension admissible. Private practice is not allowed. However, non-practising allowance is admissible to medical graduates only as per rules of the Council. Application forms can be obtained from the office of the **Director General, Indian Council of Medical Research, Ansari Nagar, Post Box. No. 4508, New Delhi-110029** to whom the complete application form should be sent accompanied with crossed postal order for Rs. 8/- (No fee for SC/ST candidates) made out in the name of the Director General, ICMR, New Delhi. Applications without postal order will not be entertained.

Candidates called for interview will be paid Ist class rail fare by the shortest route. No TA/DA is admissible for joining the post or on termination of appointment. Application from the employees working under the Central/State Govt./Semi Govt. and Govt. controlled undertakings should be sent through the employers and be received before the closing date alongwith the certificate that the applicant will be relieved within three months of receipt of appointment orders. Advance copies will be considered subject to the provisio that the certificate will be produced at the time of personal discussion. Applications received after the closing date will not be considered. At the time of interview they should produce "No Objection Certificate" from their employer.

Emerging Urban Dynamics and Policy Options

The School of Planning and Architecture, New Delhi, in collaboration with the United States Educational Foundation in India, organised an International Symposium on "India's Emerging Urban Dynamics and Policy Options" on 8-10 August, 1990. The objectives of the symposium were (i) to bring together on a common platform a group of Internationally known Indian and foreign scholars, from various disciplines who have contributed to the understanding of urban dynamics and related problems in India; (ii) to focus attention on the problems of India's large cities which are becoming increasingly unmanageable; (iii) to think about the ways and means of making small and medium size towns and rural areas more attractive places to reside and work; and (iv) to use the occasion as a preparatory effort for quick analysis and dissemination of the results of the Indian census to be held in early part of 1991.

The Symposium was inaugurated by Shri K.C. Sivaramkrishnan, Secretary, Ministry of Urban Development, Government of India while Hon'ble Shri Chimanbhai Mehta, Union Minister of State, Ministry of Human Resource Development, was the Chief Guest at the valedictory session.

The topics discussed at the Symposium included: (1) Urban Demographic Trends in India and Related Policy Issues; (2) Emerging Urban Patterns and Spatial Planning Framework; (3) Urban Poverty, Informal Sector and Inequities—an overview; (4) Role of Women in Alleviating Urban Poverty; (5) Urban Land and Housing Policies; (6) Transport Policy and Transportation System Management for Urbanising India; (7) Urban Morphology and Technology of Urban Infrastructure in the Indian Metropolis: The Case of Calcutta; (8) Urban Development in Ahmedabad; (9) Financing Urban Infrastructure—The Indian Experience; (10) Urbanisation Process and the Need for Administrative Reforms; (11) Urban Form and Conservation Policy for India; (12) Legislative Changes for Urban Development and Conservation; (13) Existing Resource Base and Policies for Mobilising for Development and Maintenance of Urban Areas; and (14) Urban Management Issues and Restructuring Planning and Development Administration.

The Symposium coordinated by Prof. J.H. Ansari, Professor of Planning and Head of the Department of Physical Planning in the School, was attended by about 50 renowned scholars of urbanisation, urban historians, conservationists, urban planners and urban management experts from India, U.S.A. and U.K. Many specialists were also invited to write papers specially for the Symposium.

Seminar on Population Education

The Adult Education Centre of the Gauhati University recently organised a seminar on population education. Organised as a part of the programme to be undertaken by the Adult Education Centre under new U.G.C. guidelines, the seminar was inaugurated by Prof. D.P. Barooah, Vice-Chancellor of the University.

In his inaugural address Prof. Barooah dwelt on the disastrous effects of population expansion and stressed the need for establishment of population education clubs, inclusion of population education in the Foundation Course at the TDC level, postgraduate level project work, interdisciplinary researches on population problems and institutionalising a Deptt. of Adult, Continuing Education and Extension.

Papers were presented on different aspects of population education by Prof. K.M. Pathak, Deptt. of Physics, Gauhati University; Prof. M. Taher, Deptt. of Geography, Gauhati University; Prof. M.C. Pandey, NEHU; Shri D.C. Choudhury, Gauhati University and Dr. (Mrs.) Lal, NEHU.

Prof. Pathak in his paper emphasised the need for removal of illiteracy from the masses for the overall development of the nation. Prof. Taher explained the causes of abnormal growth of population in the north-east region of the country. Prof. Pandey and others also deliberated at length on the problems of population growth and need for removal of illiteracy.

Shri D.D. Sharma, who presided over the inaugural function, stressed universal literacy to make the people aware of the need of limiting the family as no amount of legislation could help check the population growth without peoples' awareness.

Prof. J. Medhi, Prof. Emeritus, Gauhati University, in his concluding remarks said that in addition to the removal of illiteracy attempts should be made to make people aware of all the other amenities of modern life. He stressed that students and teachers must play important roles in making the adult education programme a success.

Prof. Yash Pal Calls for a Cultural Revolution

"How come with so much capability developed in every area, we do enter the stream of production and we cannot talk of what we have contributed to world technology?" These are some of the questions Prof. Yash Pal posed while delivering the convocation address at the

IIT, Bombay.

"We play at the sport of technology very well", Prof. Yash Pal said "Why can't we score goals?" Elaborating, he said the academicians, industry and decision makers do not work together. Excellence is not appreciated and there is no pleasure in achievements by others in our own field. Decision makers do not trust us, industry does not trust us; they trust foreign brand names, Prof. Yash Pal said, adding "Everything is not available in the brochures of foreign companies."

Prof. Yash Pal said that only with full support to innovation here in our country; only with solid backing in terms of policy and support systems can we fulfil challenges and think of opening up our economy to the world system.

We are getting so fractured in this country, what with capabilities not matching jobs and vice versa, irritations and religious, ethnic and other problems, said Prof. Yash Pal, that in this situation, our less per capita income was not as bad as the large number illiterates which form our society. This calls for not tinkering solutions but a solution in the nature of a cultural revolution, he opined.

Welcoming the Chief Guest, Dr. D.V. Kapur, Chairman, Board of Governors, IIT, Bombay, stressed on the need to evolve a close relationship and cooperation of faculty and departments with industry. Our scientific and technological expertise must be considered as a means of achieving technology absorption and adoption, he said.

Prof. B. Nag, Director, IIT, highlighted the various activities undertaken by the Institute during the course of the year.

Recognised Study Centres

In a new endeavour to provide further access to higher education and to reach out a large section of 'distant learners', IGNOU (Indira Gandhi National Open University) has launched a scheme of Recognised Study Centres. These would be in addition to 142 study centres already located in various parts of the country to provide counselling and support to students of IGNOU.

The Recognised Study Centres will be run with the support and involvement of Public Sector/Government Undertakings, voluntary organisations and other institutions engaged in educational activities. In such an arrangement, capital support will be provided by the sponsoring organisation while the academic control will be with IGNOU.

This step has been taken in response to unprecedented number of requests from various organisations which are interested to represent IGNOU in their regions. One recognised study centre has recently been established at Bokaro Steel Plant.

World Congress on Human Rights

The World Congress on Human Rights will be held in New Delhi from 10 to 15 December, 1990 under the auspices of the Jawaharlal Nehru University.

The World Congress will be a congregation of human rights activists, educationists, jurists and representatives of non-governmental organizations drawn from different countries across the five continents as well as the Secretary General/Directors General, or their representatives, of the United Nations, ILO, UNESCO, UNICEF, WHO and other inter-governmental organizations concerned with human rights problem. Representatives from member-states of the United Nations will also be invited as observers.

The World Congress will be first of its kind in Asia and is likely to become a new force in the movement of effective implementation of international human rights.

News from Agril. Varsities

New Rice Variety

The scientists of the Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, B.H.U., have evolved a new paddy variety 'Malviya Dhan-36' through mutation breeding from a popular variety 'Mahsuri'. The State Varietal Release Committee, Directorate of Agriculture, Uttar Pradesh, has released this variety for cultivation in the Eastern Zone of Uttar Pradesh.

'Malviya Dhan-36' is somewhat shorter and 15 days earlier in maturity than its parent 'Mahsuri'. In yield it is superior to 'Mahsuri' under medium fertility conditions in last three to four years in East, West and Central parts of Uttar Pradesh. It is synchronous in maturity and resistant to lodging and major rice diseases prevalent in the state providing stability in yield. Paddy grains have dormancy. Rice grains are medium slender, somewhat longer than 'Mahsuri', white shining having good cooking quality. Being early in maturity than 'Mahsuri' it will fit well under rice-wheat rotation where 'Mahsuri' is a popular variety. Under such situations, average wheat yields can be substantially improved by timely sowing.

News from UGC

Countrywide Classroom Programme

Between 19th September to 28th September, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 12 Noon to 1.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
6.00 a.m. to 7.00 a.m.

19.9.90

"Solar Research-IV"

"Handle With Care"

"Plant Fossils-I : Nature's Own Museum"

20.9.90

"The Chip that is Changing the World"

"Reflections on Poetry"

21.9.90

"Astronomy Through the Ages-I"

"Visual Perception"

"Microscopic Life in Soil"

22.9.90

"Chinese Puppet Art"

"An Introduction to Kathakali"

23.9.90

No Telecast

24.9.90

"C.P. Violation"

"Management-VII : Organisation Structures"

"Weather Prediction"

25.9.90

"The Hydrogen Spectrum"

"Visual Profile of Countrywide Classroom : A Case Study"

"Japanese Encephalitis"

26.9.90

"Solar Research-V"

"Why History?"

"Plant Fossils-II : A Study of Nature's Museum"

27.9.90

No Telecast

28.9.90

"Recent Trends in Eastern Europe : An Analysis"

"The Pursuit"

2nd Transmission
12.00 noon to 1.00 p.m.

19.9.90

"Efficient Structural Forms – II: The Beam"

"Protection of Japanese Created IBIS China"

"Marine Parks"

20.9.90

"COBOL – II: Introduction"

"In Search of Ethnic Dimension – I: The Koyas"

"Siege of English"

21.9.90

"Fundamentals of Mechanics – I"

"Urban Survival – Women Workers in the Unorganised Sector"

"Disposal of Sewage Water in Oil Refineries "

22.9.90

"Rasaranjita: Understanding Indian Dance – I: Kathakali – I"

"Looking at Paintings – I"

"Hockey"

23.9.90

No Telecast

24.9.90

"Electronic Absorption Spectroscopy"

"Management – 13: Parkinson's Law and the Peter Principle"

"Earthworms – III"

25.9.90

"The Elements of Group IV and Their Compounds"

"A Vision of Tomorrow"

26.9.90

"Efficient Structural Forms – III: The Arch"

"Kiradu: An Oasis in the Desert"

"National Marine Parks of America"

27.9.90

No Telecast

28.9.90

"Recent Trends in Eastern Europe: An Analysis"

"The Pursuit"

News from Abroad

Universities and Economic and Social Development

A meeting of the International Conference of University Teacher Organisations (ICUTO) held in Edinburgh hammered out a common policy on the value of Universities to economic and social development and the need to resist short term economic pressures. The consensus arrived at the conference is summed up as under:

Universities and other institutions of higher learning perform two major tasks: the discovery and application of new knowledge through research and the preservation and dissemination of knowledge through teaching. The distinguishing feature of a university is this integration of teaching with research. Such integrated teaching and research activity is essential to economic and social development.

Current social and economic conditions create pressures which diminish the capacity of the university to fulfil its mission. These pressures are leading in some instances to reduced investment in higher education because the economic benefits are not immediate. Where investment is maintained or enhanced it is disproportionately allocated towards vocational training, technical education and applied research at the expense of the distinctive contribution of the university to advanced education and basic research. Economic constraints and competition have further diminished the commitment to full participation of women and disadvantaged groups in the activities of the university. Fundamentally, economic and managerial criteria are replacing rather than complementing academic professional judgement and in university decision-making.

Each of the various academic disciplines contributes to the mission of the university. For example, the physical and biological sciences contribute to economic progress and human well-being and can play a vital role in restoring ecological balance as well as increasing our basic knowledge of the world in which we live. The knowledge of society, culture and language provided through the humanities and social sciences makes obvious contributions to the advance of civilisation but also makes less obvious but essential contributions to productivity and the organisation of work, the democratisation of society and to international cooperation. Moreover, a complex and rapidly evolving society requires critical examination. The economic, social, ecological and cultural consequences of radical change must be scrutinised. Universities are central to this task.

The increasing role of knowledge in society and the increasing societal demand and need for education require that government policy towards universities and allocation of resources to the university should reflect:

*the long-term commitment of the university to basic research and advanced teaching;
* the comprehensive and balanced contribution of the university to the development of science, the social sciences, the humanities and the professions;
* the need to attract and retain scholars of the highest quality to academic positions in the university;
* the need for full participation of women and disadvantaged groups in the university;
* the need to ensure an effective participatory decision-making process consistent with the best professional judgement and integrity;
* a commitment to protection of academic freedom.

Government must invest the increased resources necessary to implement these principles thus we as scholars and teachers will be able to meet our responsibilities to the university and thereby contribute to economic and social development.

Code of Conduct for Australian Academics

The Australian Vice Chancellors' Committee (AVCC) is to set out a code of good conduct for academics undertaking research. It will emphasise good record keeping, the preservation of data, close supervision of work, peer review and public presentation of findings and cover ethical behaviour and the procedures universities should adopt for dealing with instances of fraud or serious misconduct.

The proposals follow a number of notorious cases of academic misconduct and fraud in recent years. They also come after the National Health and Medical Research Council—the country's largest research funding body—issued guidelines covering sound scientific practice.

Institutions applying for or receiving funds from the council would be required to certify that they had set up procedures for ensuring that research was being conducted properly. The council has warned that failure to establish appropriate procedures could lead to cancellation of funding.

According to AVCC sources, the code of good conduct was aimed at raising the ethical consciousness of academics so that the integrity of Australian research was "even less likely in future to be damaged by isolated cases of fraud".

The code would emphasise the value of research and help foster an appropriate environment. It would be left to individual institutions to supplement the basic code with specific departmental references where necessary. These could include human and animal ethics, and professional guidelines such as those for medical, psychological and anthropological groups.

Last year, the AVCC commissioned Professor David Caro, a former vice-chancellor of Melbourne University, to develop procedures for universities to deal with academic fraud. The guidelines were endorsed by the AVCC in December and circulated for comment.

Under an industrial award agreement between the unions and higher education institutions, procedures for dealing with accusations of misconduct or fraud have already been set down. They require, however, that any inquiry into an academic's misconduct should end if the academic resigns. There are now proposals that parts of the agreement should be amended. The present award does not cover the problems that might be faced by postgraduate students helping on research projects.

Symposium on Environmental Ethics

The Earth Ethics Forum '91 proposes to organise an International Symposium on Environmental Ethics on May 10-12, 1991 at Saint Leo College (North Tampa), Florida USA. The theme of the Symposium is Green Visions and Pathways for the 3rd Millennium.

Jointly sponsored by the Earth Ethics Research Group, Inc. USA and Saint Leo College, USA the Symposium will discuss papers relating to philosophical, religions, educational, sociological & economic business aspects of environmental ethics. These include: (i) Descriptive and normative environmental ethics, historical perspectives, rights of nature and future generations, interdependence of anthropocentric and environmental ethics, science/technology and ethics; (ii) Comparative religions perspective, contemporary theological development, the ecclesiastical awakening, religio-cultural perspectives, scriptural basis, interreligious cooperation, creation-centered theology; (iii) Environmental context for curricula, new teaching methods and materials, implementation of ecology-centered curricula and its tangible effects; (iv) Environmental socio-political movements, social impact of the emerging eco-awareness, social synergism between environmental, feminist, and liberation movements, the role of Non-Governmental Organizations (NGO's), population, science/technology and environment; and (v) Economic growth vs. environmental degradation, impact on economics, mixing business ethics and environmental ethics, environmental ethics and Third-World development.

Further details about participation, etc. may be had from the **Earth Ethics Forum '91**, Earth Ethics Research Group, Inc., 13938 85 Terrace North, Seminole, Florida 34646 USA.

CIES 1991 Conference

The Comparative and International Education Society (CIES) proposes to organise a Conference on Education and Changing Social Realities from 14-17 March, 1991 at the University of Pitsburgh, Pitsburgh (USA). The 1991 CIES Conference will focus on: How do we understand the changes locally, nationally, regionally, and globally that have or have not taken place? What contributions have education, policy makers, educators, and students played in facilitating or impeding these changes? How have education and the experiences of policy makers, educators, and students been altered, if at all, during or after such social changes? In what ways have policy making, curriculum, pedagogy, evaluation, educators' work been altered? What roles do and should comparative and international educators play in this context? What should we study, from what perspectives and within which methodological traditions. To whom should we direct our educational efforts and concerning what issues? With which organizations and groups should we form alliances? The contemporary period, of course, is not unique in witnessing social changes. Thus, we need to examine the connections between education and changing social realities in the past and future as well as in the present.

Details about presentation of papers and participation can be had from Mark Ginsberg, CIES Conference, Institute for International Studies in Education, 5RO1 Forbes Quadrangle, School of Education, University of Pittsburgh, Pittsburgh. PA, 15260, USA.

विद्यार्थियों/अध्यापकों के लियं शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातकोत्तर स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्रन-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपलब्ध सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के लिये प्रश्रन-बैंकों की इस श्रृंखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्रचय ही लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रु० 100.00
रसायन विज्ञान (Chemistry)	मूल्य रु० 160.00
इतिहास (History)	मूल्य रु० 70.00

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
ए.आई.यू. हाउस, १६ कोटला मार्ग
नई दिल्ली-११०००२

Book Review

Glittering Gems of Inspiration

G.B.K. Hooja*

Drstikona: Multi-disciplinary Bilingual Annual Research Journal; Ed: Sunderdas V. Gohrani; published by M.N. Chaturvedi, Fatehgarh-209601; 1990; Price Rs. 60/- pp. 210.

Drstikona (which literally means Point of View) is a multi-disciplinary bilingual annual research journal. As stated by M.N. Chaturvedi in the preface, it seeks inspiration from the god Sun and aims at carrying on its task of universal enlightenment without interruption.

सूर्यस्य पश्य श्रेमाणं यो न तन्द्रयते चरन्।

The issue under review contains material arising out of the symposia, discussions and group meetings held by a band of scholars, administrators, social workers and the enlightened citizens at Farrukhabad/Fatehgarh in U.P. during 1988 and 1989. There are essays on such varied topics as Changing Images of Women, World War II and Indian Politics, English Language Teaching, The Undercurrent of Humanism in Theodore Dreiser's Novels, Deposits of Commercial Banks; Landmarks in Indian Banking, Vedantic Parallels in Wordsworth's poetry, संघर्ष का समाजशास्त्र एवं भावी युवा पीढ़ी, उत्तराखण्डः एक यायावरी दृष्टि, शाह लतीफ का अध्यात्म-काव्य, अपराधः कारण और निवारण।

Besides, there are reports on talks and discussions on such issues as the Resources of Farrukhabad, Malgonkar's Novels, etc.

Apparently, in response to local compulsions, the material contained in the volume under review is partly in English and partly in Hindi. Its bilingual character thus enhances its utility and widens the scope of its readership.

As the report shows, amongst the founder members are Prof. M.N. Chaturvedi, Dr. Surendra Swaroop, Dr. Shamim Naqvi, K.K. Sinha, IAS, Inder Singh Mehra, IPS, Col. Sher Singh Tanwar, Dr. C.S. Tripathi, D.M.O. Other members are V.N. Garg, IAS, P.C. Chaturvedi, Advocate, Udai Nath Mishra, Manager, UCO Bank, S.V. Gohrani, State Bank of India, Dr. Munish Behari Saxena, Pathologist, Dr. Umesh Chandra, Economist, Dr. P.M. Mathur, Dentist, etc. Amongst the list of distinguished persons invited to address the various meetings occur names of Dr. R.K. Tiwari, Dr. Mithilesh Kumar Mishra, Dr. Shiv Dwivedi, Pschycotherapist, Girish Patel, Cricketer, Arun Dixit, Radio & TV Artists, Ratnesh Mishra and Kishore Chaturvedi, Col. Sher Singh Tanwar, who served in the Operation Pawan in Sri Lanka with IPKF.

It is gratifying to note that in this organisation administrators, artists and activitists rub shoulders with scholars to share their studies and exchange notes on subjects of their specialization. It would, however, add to the mental enrichment of the group and eventual social enlightenment if they addressed themselves increasingly to the burning problems of the day, such as untouchability, dowry, Sati, Womens' empowerment, educated unemployment, environmental pollution, adult illiteracy, poverty, electoral reform, communalism, casteism, etc. They could develop in course of time a massive network across the country, and establish bridges of national understanding. It would do a great service to the nation, if the reports of such constructive activities at the micro-level also find a place in the mass media.

There is, no doubt, that there is a great stirring abroad and Hindostan stands at the threshold of a quantum jump. New hopes and aspirations throb in the hearts and minds of millions of men and women; and "impel all thinking things", so that the world shall not be the same again. To reproduce the lines from the poet, composed a few miles above Tintern Abbey, quoted by Man Mohan Lal in his essay on Vedantic Parallels in Wordsworth's poetry:

> And I have felt
> A presence that disturbs me with the joy
> of elevated thoughts; a sense sublime
> Of something far more deeply interfused
> Whose dwelling is the light of setting Suns
> And the round Ocean and the living air
> And the blue sky, and in the mind of man
> a motion and a spirit, that impels
> All thinking things, all objects of all thought
> and Rolls through all things.

In the same strain is the study of the uplifting poetry of the great Sindhi Poet, Shah Latif (1689-1752). As noted by Gohrani, Shah Latif falls in the tradition of the great builders of the composite Indian culture, Nizamuddin Auliya, Amir Khusrau, Nanak and Kabir, a messenger of Peace and Harmony, Hindostaniat and *Insaniyat* (humanitarianism).

The travels of Giri Raj Shah through Uttarakhand evoke yet another nostalgic experience. It would have added to the value of the report, if a map showing the places visited had also been annexed. The lure of the Himalayas has been an eternal quest with the

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**Former Vice-Chancellor,*
Gurukula Kangri Vishwavidyalaya,
"GOVARDHAN", A-15-A, Vijai Path, Jaipur (302004).

Indians. In earlier ages, the Himalayas had shielded and sheltered the inhabitants of the Hindostani sub-continent. With passage of time, the Himalayas have turned aged; now they stand threatened by intruders and invaders and need all the care and service which their grandchildren can bestow on them (in the interest of the generations to come). One may repeat with Shah, the message of the ancient Rishi:

> आस्ते मग आसीनस्य उर्ध्वस्तिष्ठति तिष्ठतः
> शेते तिष्ठमानस्य चराति चरतो मगः चरैवेति चरैवेति।।

The destiny of the man, who keeps sitting, tends to stay out; the Destiny of the man, who keeps standing, tends to stand still and that of the man who keeps moving, moves; therefore keep on moving, marching.

In the same category, stands the narration of 100,000 Km. travels, lasting over 18 years made by Hamraz to collect the anthology of Hindi film songs, which has been duly acknowledged as a "master reference work" in this field. No doubt, perseverance and patience pay in the long run.

The reminiscences of Col. Tanwar who commanded 114 TA Batallion with the IPKF in aid of Sri Lanka too form yet another ponderable input in this issue of the Drstikona. They bring out the dilemma facing small nation states in the modern world over-shadowed, as it is, by dominating, unethical, super-powers, whose foreign policy is not unnaturally dictated by their self-interest, in the first instance; and brings to the fore the need for regional cooperation as examplified in EEC, ASEAN and SAARC.

This review may appropriately end with poet Kanchan's *Dhanush-ki-Tankaar part:*

> धनुष की टंकार पर जो छन्द गढ़ते हैं,....
> वह युगों तक चमकते हैं सूर्य बन कंचन,
> क्योंकि वे ही सभ्यता की नींव धरते हैं।।

Drstikona is littered with such glittering gems of inspiration,

One would wish continuing progress to this creative group. May their tribe multiply. Excelsior.

Information Service to Researchers in Universities

The National Centre for Science Information (NCSI) offers upto date, computerised information services to the faculty members and researchers in Indian Universities and Colleges *free of charge.* Operating since 1984 from the Indian Institute of Science, Bangalore, the Centre has been set up by UGC. Its staff consists of computer scientists, information scientists and support personnel. Besides its own minicomputer facility, the Centre has access to the IISc DEC 1090 mainframe computer system. NCSI has arrangements with the world's leading abstracting services to regularly receive their database updates on magnetic tapes.

A researcher enrolled for this service will regularly receive abstracts of recently published literature pertaining to his area of research. This includes journal papers, conference proceedings, books, patents, technical reports, meetings, reviews, etc. Besides the abstract, each computer printout contains details of author, title, source, reference, author address, etc.

The areas covered by the service are:

Physics: All areas of Physics, Electrical & Electronics Engg., Computers and Control and Information Technology—From INSPEC-I (IEE, UK) Database covering 'Physics Abstracts', 'Electric & Electronics Abstracts' & 'Computer & Control Abstracts'; **Chemistry:** Biochemistry, Organic Chemistry, Macromolecular Chemistry, Applied Chemistry, Chemical & Physical Engg., Inorganic and Analytical Chemistry—From CA-Search (Chemical Abstracts Service, USA) database covering 'Chemical Abstracts'; **Mathematics:** Statistics, Numerical Analysis, Fluid Mechanics and related fields like Relativity, Astronomy, Astrophysics, etc.—From MATHSCI (American Mathematical Society, USA) database covering 'American Mathematical Reviews'; **Life Sciences:** General Biology, Basic Medical Sciences, Micro-biology, Immunology, Public Health and Parasitology, Plantology, Sciences and Animal Sciences—From BIOSIS (Bioscience Information Service, USA) database covering 'Biological' Abstracts'; **Geology:** All aspects of Geology, Minerology and Crystallography, Hydrology and Geophysics—From GeoRef (American Geological Institute, USA) database covering 'Bibliography & Index to Geology'.

Software has been developed at NCSI to scan the database update tapes on a computer and to select abstracts that match the "User Profile". The profile of an user is constructed using keywords supplied by him/her at the time of enrollment. Through regular user feedbacks, these profiles are periodically updated to precisely match the user interests.

Currently the Centre has on its mailing list more than 2,000 scientists working in Universities and Institutions of higher learning all over the country and engaged in research in different areas of science.

If you are a researcher in any University or College, and wish to become a user of this *free service,* you may make your request for a 'Profile Information Sheet' to: Prof. V. Rajaraman, Chairman, National Centre for Science Information, Indian Institute of Science, Bangalore 560 012.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857–1970 and 1970–75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5:30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A list of Research Scholars registered for doctoral degrees in Indian Universities.

SOCIAL SCIENCES

Psychology

1. Sarangi, Lalit Mohan. *A study of the awareness and utilisation of educational opportunities among scheduled caste and scheduled tribe students at the post-secondary level.* Sambalpur. Dr. Bhabagrahi Biswal, Reader, Department of Education, S.V.M. College, Jagatsinghpur, Cuttack.

2. Sumaranjitha, L. *The cognitive, emotional and social correlates of irrational beliefs among first year college girls: An analytical study.* Kerala. Dr. Krishna Prasad Sreedhar, Prof., Department of Psychology, University of Kerala, Kariavattom.

Sociology

1. Babu, P.K. *Fertility and contraceptive use dynamics among fisherfolk in Alleppey District, Kerala.* Kerala. Dr. P.S. Nair, Additional Director, Population Research Centre, Department of Demography, University of Kerala. Kariavattom.

2. Bajpai, Sandhya Ashok. *Nagariya parivesh mein Hindu parivaron ke badalte huye pratiman: Indore Nagar ke vishesh sandarbh mein.* Devi Ahilya. Dr. B.M. Munjal, Prof. and Head, Department of Sociology, Govt. Arts and Commerce College, Indore.

3. Pandey, Sunanda. *Nagariya vivahit mahilayen aur jansankhya niyantran: Indore Nagar kee mahilayon per adharit ek samajshastriya adhyayan.* Devi Ahilya. Dr. D.K. Gupta, Asstt. Prof., Department of Sociology, Govt. Girls Nutan P.G. College, Indore.

Political Science

1. Prabhavathy, C. *Inter-party relations in coalition Governments in Kerala in the 1980's.* Kerala. Dr. D. Jayadevadas, Reader, Department of Politics, Institute of Correspondence Courses, University of Kerala, Kariavattom.

Economics

1. Balasubramanium, V. *Economics of research and development.* Kerala. Dr. P.K. Gopinathan Nair, Department of Economics. University of Kerala, Kariavattom.

2. George, Thomas. *Regional disparities in Kerala's development.* Kerala. Dr. K. Ramachandran Nair, Department of Economics, University of Kerala, Kariavattom.

3. Gopa Kumar, K. *Entrepreneurial development and industrial growth in Kerala.* Kerala. Dr. K. Ramachandran Nair, Department of Economics, University of Kerala, Kariavattom.

4. Indirakutty, A. *Mortality and morbidity of industries in Kerala.* Kerala. Dr. K. Ramachandran Nair, Department of Economics, University of Kerala, Kariavattom.

5. Jain, Sujata. *Indore sambhag ke adivasi jilon mein upbhokta vyavhar ka adhyayan.* Devi Ahilya. Dr. Ganesh Kawadia, Reader, School of Economics, Devi Ahilya Vishwavidyalaya, Indore.

6. Jaya Murali, K. *Fiscal crisis in Kerala.* Kerala. Dr. G. Karunakaran Pillai, Department of Economics, University of Kerala, Kariavattom.

7. Krishnambal, B. *The temple: An economic institution*. Kerala. Dr. S. Uma Devi, Department of Economics, University of Kerala, Kariavattom.

8. Leelamma, B.P. *Socio-economic change in a fishermen community: A study of intervention and their consequences in Kerala*. Kerala. Dr. P.R. Gopinathan Nair, Department of Economics, University of Kerala, Kariavattom.

9. Mary, P.J. *Growth of fertiliser consumption: A micro level study*. Kerala. Dr. K. Ramachandran Nair, Department of Economics, University of Kerala, Kariavattom.

10. Mathew, M.V. *Some aspects of the political economy of the plantation sector in Kerala*. Kerala. Dr. K. Ramachandran Nair, Department of Economics, University of Kerala, Kariavattom.

11. Michael Raj, M. *Causes and consequences of commercialisation of agriculture: A case study of Kanyakumari District*. Kerala. Dr. G. Karunakaran Pillai, Department of Economics, University of Kerala, Kariavattom.

12. Pujari, Appasaheb G. *Progress and prospects for development of pomegranate and ber in Solapur District*. Shivaji. Dr. R.R. Doshi, Department of Economics, Shivaji University, Kolhapur.

13. Singh, Gunveena P. *Role of institutional finance in the industrial development in tribal region of South West Madhya Pradesh*. Devi Ahilya. Dr. S.S. Pawar, Prof. and Head, Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

Law

1. Parmar, Mansingh. *Hinduon mein bahu vivah: Ek vaigyanik shodh; Adivasi kshetron ka adhyayan, Madhya Pradesh ke sandarbh mein*. Devi Ahilya. Dr. G.C. Kasliwal, Principal (Retd.), Govt. Arts and Commerce College, Indore.

Commerce

1. Herekar, Prakash M. *Financial appraisal of Sugar industry in Belgaum District*. Shivaji. Dr. (Smt.) V.M. Kashalikar, Devchand College, Arjunnagar.

HUMANITIES

Philosophy

1. Mehrotra, Archna. *The problem of moral freedom in Indian thought*. BHU. Dr. C.P.M. Namboodhary, Department of Philosophy, Banaras Hindu University, Varanasi.

Language & Literature

English

1. Kodnani, Swarna. *Realism in the fiction of Bronte Sisters: A study of the male protogenists*. Vikram. Dr. Santosh R. Zulka, 9 Bhakta Nagar, Dushera Maidan, Ujjain.

Hindi

1. Dass, Subhashini. *Kamayani kee bhasha ka vyakaran*. Devi Ahilya. Dr. Dilip Kumar Chouhan, Asstt. Prof., Department of Hindi, Govt. Arts and Commerce College, Indore.

2. Nair, Asha S. *Bachchan ke kavya mein samajik chetana*. Kerala. Dr. C.P. Rajagopalan Nair, Prof., Department of Hindi, University Evening College, Trivandrum.

3. Rajasree, S. *Premchand kee kahaniyon per Gandhivad ka prabhav*. Kerala. Dr. C.P. Rajagopalan Nair, Prof., Department of Hindi, University Evening College, Trivandrum.

4. Sobhanakumariamma, K.K. *Adhunik sandarbh mein Dinkar kavya ka punarmoolyankan*. Kerala. Dr. S. Christudas Chandran, Asoka, Spencer Junction, Trivandrum.

5. Soundakumari, S. *The progressive consciousness in the works of Nagarjun*. Kerala. Dr. K. Valsaladevi, Lecturer, Department of Hindi, Govt. College for Women, Trivandrum.

6. Sreekumari, K.P. *Dwivedi kaleen kavita kee mukhya pravrittiyon ka alochanatmak adhyayan*. Kerala. Dr. H. Parameswaran, Prof., Department of Hindi, University College, Trivandrum.

7. Sreelatha, K. *Kabir poet and the age: A revaluation*. Kerala. Dr. S. Thankamony Amma, Reader, Department of Hindi, Institute of Correspondence Courses, University of Kerala, Trivandrum.

8. Surendran Nair, S. *Guleri aur Kesari. Hindi aur Malayalam ke do yug prabhavi sahityakar*. Kerala. Dr. V.P. Mohammed Kunju Metharu, Reader, Department of Hindi, Institute of Correspondence Courses, University of Kerala, Trivandrum.

Tamil

1. Jeyaprema, T. *Works of Isai Selvar Lakshmana Pillai: Critical study*. Kerala. Dr. P. Doctor Nazeemdeen, Lecturer, Department of Tamil, University of Kerala, Kariavattom.

2. Tharmalingam, S. *Critical study of Kalithokai*. Kerala. Dr. L. Gloria Sundramathy, Prof., Department of Tamil, University of Kerala, Kariavattom.

Geography

1. Tamhane, Sangeeta. *Indore ke nagariya upant kee sanrachna tatha uska nagariya antrasambandh*. Devi Ahilya. Dr. Vijaya Phanse, Head, Department of Geography, Govt. Arts and Commerce College, Indore.

History

1. Bhatia, P.S. *Swadhinta andolan mein Chhindwara Jile ka yog, 1920 se 1947 tak*. HS Gour. Dr. S.S. Chouhan, Department of History, Govt. College, Narsinghpur.

2. Chaturvedi, Mangala. *Sagar Jile mein Swedish Isai Mission kee gatividhiyan, 1878-1978*. HS Gour. Dr. M. Biswas, Department of History, Danielson College, Chhindwara.

3. Chaturvedi, Sadhvi. *Betul Jile mein Swedish Isai Mission kee gatividhiyan, 1878-1978*. HS Gour. Dr. M. Biswas, Department of History, Danielson College, Chhindwara.

4. Gupta, Dinesh Kumar. *Sawinaya awagya andolan mein Jabalpur Sambhag ka yogdan, 1930 se 1934*. HS Gour. Dr. M. Biswas, Department of History, Danielson College, Chhindawara.

5. Jain, Ajit Kumar. *Madhya Pradesh aur Berar mein shiksha ka vikas, 1835 se 1947*. HS Gour. Dr. D.B. Trivedi, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

6. Parihar, Neeta. *Narsinghpur Jile kee prashasnik vyavastha: Ek itihasik sarvekshan, 1818 se 1956 tak va 1956 se 1961 tak.* HS Gour. Dr. S.S. Chouhan, Department of History, Govt. College, Narsinghpur.

7. Pati, Biranchi Narayan. *Urban history of Cuttack, 1936-1947 A.D.* HS Gour. Dr. B.B. Srivastava, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

8. Sahu, Kisan Lal. *Narsinghpur Jile kee samajik evam arthik sanrachna tatha tatsambandhi samasyayon ka adhyayan: San 1920 se 1964 tak.* HS Gour. Dr. S.S. Chouhan, Department of History, Govt College, Narsinghpur.

9. Yadav, Rajkumari. *Gupta kaleen samaj: Ek alochanatmak punranirikshan.* HS Gour. Dr. V.D. Jha, Department of Ancient Indian History, Culture and Archaeology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities.

SOCIAL SCIENCES

Library & Information Science

1. Verma, Sunder Lal. *A comparative study of the national information systems in education in U.K. and USA with a view to developing a model for India.* Delhi.

Psychology

1. Daniel, Elizabeth. *Study of disorders of emotion and conduct.* Bangalore. Dr. (Mrs.) Malavika Kapur, Department of Clinical Psychology, National Institute of Mental Health and Neuro Sciences, Bangalore.

2. Gupta, Sunita. *The interactive effects of reinforcement and personality on verbal operant conditioning abstract.* BHU. Dr. A.P. Shukla, Reader, Department of Psychology, Banaras Hindu University, Varanasi.

3. Premachand Babu, P. *Impact of locus of control, relig ethic and adjustment on job satisfaction and job involve employees in religious and secular managements.* Venkateswa K. Sivasankara Reddy, Department of Psychology, Sri Venkateswara University College, Tirupati.

4. Rai, Narendra. *Validation of the cognitive components of the Rorschach Test: The orthogenitic approach.* BHU. Prof. R.R. Tripathi, Department of Psychology, Banaras Hindu University, Varanasi.

5. Shivepujan Singh. *Effect of coping strategies on the relationship between occupational stress, performance and morale.* BHU. Dr. A.K. Srivastava, Lecturer, Department of Psychology, Banaras Hindu University, Varanasi.

6. Vyas, C.N. *An impact of religious attitude on old age adjustment.* Saurashtra. Dr. M.R. Kothari.

Sociology

1. Jeya Singh, P. *Medico-social correlates of sexually transmitted diseases: Their prevalence and spread.* Madurai.

2. Mishra, Nishi. *Vetanbhogi mahilayen: Samajik arthik sandarbh evam mulya unmesh.* BHU. Dr. P.N. Pandey.

3. Pandey, Birendra Kumar. *Hastshilp udyog ke shramik. Bhadohi kalin udyog mein lage shramikon ka samaj vaigyanik adhyayan.* BHU. Dr. J.K. Tewari, Lecturer, Department of Sociology, Banaras Hindu University, Varanasi.

4. Pandey, Mahendra Kumar. *Nature and dynamics of social participation in urban community: A sociological study of poor urban localities in Varanasi City.* BHU. Prof. S.K. Srivastava, Department of Sociology, Banaras Hindu University, Varanasi.

5. Sharma, Rakesh. *Nagriya netritva ke pratiman: Ek samaj shastriya adhyayan.* HS Gour. Dr. R.M. Ram, Department of Sociology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

6. Varma, Priti. *Nagariya parivesh mein sambandhon ke badalate swarup: Varanasi Nagar per adharit ek samaj vaigyanik adhyayan.* BHU. Dr. A.L. Srivastava, Reader, Department of Sociology, Banaras Hindu University, Varanasi.

Social Anthropology

1. Dasgupta, Parasmani. *Growth at adolescence: A study of the Bengali school going boys.* Calcutta.

2. Gohain, Birendra Kumar. *A study of continuity and change in three hill Lalung villages of Karbianglong District, Assam.* Gauhati. Late Dr. D.N. Majumdar.

3. Sarkar, Sankar Kr. *A study of the impact of community development programmes on the Garos of Rissu—Belpara Development Block in the District of Garo Hills, Meghalaya.* Dibrugarh. Dr. K.C. Mahanta, Reader, Department of Anthropology, Dibrugarh University, Dibrugarh.

Social Work

1. Vijay, Vasanthy. *An approach to therapeutic communication in Hindu families with psychosocial problems in Bangalore City.* Bangalore. Dr. H.M. Marulasiddaiah, Prof. and Chairman, Department of Social Work, Gujarat Vidyapith, Ahmedabad.

Political Science

1. Claire, Daljit Singh. *Social action litigation and Supreme Court.* Delhi.

2. Ghose, Punita A. *Cuba's relations with United States 1968-1976.* JNU. Prof. R. Narayanan, Centre for American and West European Studies, Jawaharlal Nehru University, New Delhi.

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Service Conditions and Benefits: The post carries benefits of G.P. Fund-cum-Gratuity-cum-Pension and Central Government Health Services Scheme on appointment. The period of probation is one year. Allowances are as admissible to comparable posts in the Government of India.

Procedure for applying: Application on prescribed form accompanied by attested copies of certificates and testimonials and a demand draft of Rs. 5/- (non refundable), as the application fee, in favour of School of Planning and Architecture, New Delhi-2, should reach the Registrar of the School by **28.9.1990.** Request for forms must be accompanied by self-addressed un-stamped 25cm × 12cm envelope. Applicants who are in Govt./Semi-Govt. undertakings must send their applications through proper channel.

Candidates from outside Delhi called for interview will be paid IInd Class Rail Fare for both the journeys (within India).

SOUTH GUJARAT UNIVERSITY
UNIVERSITY CAMPUS, UDHNA-MAGDALLA ROAD
POST BOX NO. 49, SURAT-395 007

Applications are invited in the prescribed forms (in eight copies) for the following teaching posts in Post-Graduate Departments of the University.

Sr. No.	Department	Posts
1	2	3
1	Bio-Sciences	** (i) One Professor (Marine Biology/Algology/Fishery/Morphology/Ecorology) *** (ii) One Reader (Micro)
2	Business and Industrial Management	** (i) One Professor (Marketing with adequate experience of teaching Business Policy) * (ii) One Reader ** (iii) One Lecturer (Marketing Management)
3	Physics	*** (i) One Professor (Solid State Electronics) ** (ii) One Lecturer (Solid State Physics preferred)
4	Computer Science	* (i) One Professor (Management Information System (MIS)/System Developments/Information Technology) *** (ii) One Reader (iii) One Reader (System analysis and design/Artificial intelligence/Data Structure and Management/Computer Graphics) ** (iv) One Lecturer (Discrete Mathematics/Managerial Economics/Behavioural Science/Optimization Theory/Computer Architecture/(Organisational Structure)
5	Chemistry	** (i) One Professor (Inorganic/Organic/Physical Chemistry)
6	Public Administration	** (i) One Lecturer
7	Education	(i) One Reader *** (ii) One Reader
8	Rural Studies	*** One Lecturer (in Public/Rural Administration)
9	English	* (i) One Lecturer
10	Department of Continuing Education and Extension Work	** (i) One Assistant Director (ii) One Assistant Director (iii) Two Project Officer

NOTE:

* These posts are reserved for Scheduled Caste.

** These posts are reserved for Scheduled Tribe.

*** These posts are reserved for Socially and Economically Backward Classes of Gujarat State (Baxi Panch, classification of Gujarat State).

For reserved posts, only candidates belonging to above classes need apply.

Pay Scales for the above posts are as under:

(1) Professor:
Rs. 4500-150-5700-200-7300

(2) Reader/Asstt. Director:
Rs. 3700-125-4950-150-5700

(3) Lecturer/Project Officer:
Rs. 2200-75-2800-100-4000

In addition to pay, the permanent teachers of the University Departments are entitled to draw Dearness Allowance, House Rent Allowance and other benefits like Pension-cum-Gratuity, Leave Travel Concession and Medical benefits.

Candidates belongs to Scheduled Castes/Scheduled Tribes and Socially and Economically Backward Classes (Baxi Panch) of Gujarat State should clearly indicate in their application the caste to which they belong and attached necessary certificate from authorities in Gujarat State alongwith their application.

Information about Qualifications and Special field in which the appointment on each post is to be made will be supplied with prescribed application form which can be had from the undersigned on payment of Rs. 15/- in cash or by postal order alongwith self-addressed envelope of 22 cmx13 cm size with postal stamp worth Rs. 5/- Ps. affixed thereon. Canvassing in any form will disqualify the candidate.

The last date for receipt of application is **27.9.1990.**

SURAT **N.K. Desai**
28.8.1990 **Offg. REGISTRAR**

UNIVERSITY OF RAJASTHAN
JAIPUR

NOTIFICATION

The University has re-opened for the session 1990-91 from **Wednesday, the Ist August, 1990.** Applications for new admissions to the following **Post-graduate and Diploma** courses provided by the University are invited on the prescribed form by the dates specified below in para 2:

1. Two-year M.A. Courses in (i) Hindi, (ii) English (iii) Sanskrit, (iv) Philosophy, (v) Urdu & Persian, (vi) Music, (vii) Drawing and Painting, (viii), History and Indian Culture, (ix) Economics, (x) Public Administration, (xi) Political Science, (xii) Sociology, and (xiii) Anthropology.
2. Two-year M.Sc. Courses in (i) Physica, (ii) Chemistry, (iii) Zoology, (iv) Botany, (v) Geology, and (vi) Home Science.
3. Two-year M.A./M.Sc. Courses in (i) Mathematics, (ii) Statistics, (iii) Geography, and (iv) Psychology.
4. Two-year M.Com. Courses in (i) Accountancy and Business Statistics, (ii) Business Administration, and (iii) Economic Administration and Financial Management.
5. Three-year Post-graduate Diploma Course in Cost & Works Accountancy.
6. One-year Post-graduate Diploma Courses in (i) Banking and Finance, (ii) Co-operation, (iii) Salesmanship and Marketing, (iv) Personnel Management and Labour Welfare, and (v) Entrepreneurship.
7. One-year Post-graduate Diploma Courses in (i) Human Ecology, (ii) Environmental Studies, and (iii) Population Ecology.

8. One-year Post-graduate Diploma Course in Indian Culture.
9. One-year Post-graduate Courses in German/French.
10. One-year Certificate and Two-year Diploma Courses in French/German/Russian.
11. Eight-weeks Certificate Courses in (i) BASIC Programming, (ii) FORTRAN Programming, (iii) COBOL Programming, and (iv) PASCAL Programming.

The last date for receipt of application forms for new admissions to the above courses will be 15th day from the date of declaration of result of the qualifying examination by this University without late fee and 22nd day with a late fee of Rs. 10/-

No application form will be entertained after the expiry of the last date for receipt of application forms for admission with late fee.

The prescribed application from for admission (with prospectus containing information for new admissions) can be obtained from the following on cash payment of Rs. 3/- per form from **28th August, 1990**:

(i) Rajasthan Vishwavidyalaya Sahkari Upbhokta Wholesale Bhandar Ltd., University Campus, Jaipur.
(ii) The Dean, Students' Welfare, University of Rajasthan, Jaipur.
(iii) Students Service and Information Centre, University Central Office, Jaipur.

Application forms can also be obtained by post on remittance of Rs. 12/- (including postal charges of Rs. 9/- for registered Book Post) per form by Money Order to the Registrar, University of Rajasthan, Jaipur, stating the purpose of the remittance on the Money Order Coupon with full address.

Eligibility conditions and other rules for admission are given in the prospectus.

Application forms for admission to the R.A. Podar Institute of Management, Department of Library Science and University Law College, Jaipur, should be obtained from the Director/Head of the Department concerned.

Enquiries regarding M.Phil. Courses/Ph.D. registration should be made from the Department concerned.

REGISTRAR

INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES

GOVANDI STATION ROAD, DEONAR, BOMBAY-400088.

SPECIAL DRIVE FOR RECRUITMENT OF SC/ST CANDIDATES

Applications are invited for the following posts reserved for Sch. Castes/Sch. Tribes candidates only.

1. **One Console Operator (Reserved for Sch. Tribes).**

   Essential: (i) A pass in S.S.C. examination or equivalent; (ii) One year's experience of Data Processing Work.

   Scale of Pay: Rs. 1640-60-2600-EB-75-2900. Age: Not more than 35 years.

2. **One Technical Assistant (Reserved for Sch. Castes).**

   Qualifications: M.A./M.Sc. degree in Statistics or Mathematics, preferably with experience of working in research institutions; or M.A./M.Sc. degree in other social sciences with some training and/or experience in the field of Statistics/Demography. **Scale of Pay:** Rs. 1400-40-1800-EB-50-2300. **Age:** Not more than 35 years.

The posts carry dearness and other allowances as admissible to Central Government employees of equivalent grade stationed in Bombay. **The Applicants working in Government or semi-Government organization should send their applications through proper channel.**

Applications stating age, address, qualifications, experience, etc., in detail alongwith photostat copies of Certificates including Certificates of SC/ST issued by the competent authorities should reach the Administrative Officer latest by **September 24, 1990.**

K. Srinivasan
DIRECTOR

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto **10th October, 1990 for Two Posts of Senior Research Officer** in the Hqs. Office of the Council.

Scale of Pay: 3000-100-3500-125-4500 plus usual allowances as admissible under the rules.

QUALIFICATION & EXPERIENCE : Essential : (a) MBBS with 6 years research/teaching experience in Microbiology, Preventive and Social Medicine, Medicine or Paediatrics. OR (b) MD/Ph.D. with 2 years research/teaching experience in Microbiology, Preventive and Social Medicine, Medicine or Paediatrics.

Desirable Qualification : Experience of Research in Communicable Disease Epidemiology or Health Services.

Job Requirement : The incumbent will be required to coordinate research activities in communicable diseases and health services including intramural programmes in the permanent Institutes of the Council and the ICMR extramural research project in Institutions.

Age : Below 45 years. SC/ST Candidates allowed relaxation as per Govt. of India rules.

Conditions : Candidates called for interview will be paid 2nd class return rail fare on production of documents. Non-practicing allowance is admissible to Medical Graduates only as per rules of the Council. Private practice is not allowed. Service under the Council is pensionable. The period of experience prescribed is relaxable at the discretion of the competent authority.

Application from employees working in Govt. Departments, Public Sector Organisation and Govt. funded research agencies should be forwarded through proper channel.

Application forms and other details can be obtained from the Office of the **Director-General, Indian Council of Medical Research, Ansari Nagar, New Delhi-110029,** to whom completed application should be sent alongwith a crossed Indian Postal Order for Rs. 8/- payable to DG, ICMR, New Delhi. SC/ST candidates are exempted from this payment.

Incomplete and late applications will not be entertained.

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University News

MONDAY, SEPTEMBER 17, 1990 Rs. 2.50

National Concerns & Higher Education

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Towards an Enlightened and Humane Society

●

Workshop on Question Banking

●

Study Centre for the Disabled

●

ICMR Awards

●

UNESCO's Literacy Prizes

CLASSIFIED ADVERTISEMENTS

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY
THIRUVANANTHAPURAM-695 011.

(An Institute of National Importance)

ADMISSION NOTICE

POSTDOCTORAL PROGRAMMES: ACADEMIC SESSION COMMENCING ON JANUARY 1991

Qualified Indian nationals desirous of seeking admission to the various postdoctoral programmes commencing on January 1, 1991 are invited to apply in the prescribed form (non-transferable which can be had of the Institute on request accompanied by a Bank Demand Draft of value of Rs. 25/- drawn in favour of State Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. The request should clearly state the name of the candidate, the programme to which admission is sought and the particulars of demand draft (number, branch bank and date of issue).

Programmes offered

	Course duration	Total No. of Seats
DM Cardiology	3 years	Four
DM Neurology	3 years	Two
M.Ch Cardiovascular & Thoracic Surgery	3 years	Three
M.Ch Neurosurgery	3 years 5 years (less 1 yr)	Three in all
Postdoctoral certificate course in		
(a) Cardiovascular and Neurosurgical Anaesthesiology	1 year	Four
(b) Cardiovascular and Neuro-Radiology	1 year	Two

Minimum educational qualification for entry

3 year DM programmes:

MD in General Medicine or Paediatrics or Diplomate from National Board in General Medicine or Paediatrics.

Note:—

(i) Candidates with MD in psychistry with a minimum of six months residency posting in General Medicine and Neurology during the said course can also apply for DM (Neurology).

(ii) One seat in DM Cardiology is reserved for candidates with MD in Paediatrics/Diplomate from National Board in Paediatrics.

3 year M.Ch programmes:

MS in General surgery/Diplomate from National Board in General surgery.

5 year M.Ch (Neurosurgery) programme: MBBS degree and one year post-registration house surgeoncy/residency in general surgery from a University/PG Institute/Teaching hospital recognised by the Institute. Candidates selected under this provision will be entitled to one year exemption. Candidates without one year experience in general surgery (as mentioned above) need not apply.

Postdoctoral Certificate Course:

(a) Cardiovascular and Neurosurgical Anaesthesiology

(b) Cardiovascular and Neuro-radiology

MD/MS degree in Anaesthesiology/Diagnostic Radiology or Diplomate from National Board in Anaesthesiology/Diagnostic Radiology.

Note:—

All the aforesaid qualifications should have been obtained from an Indian University recognised by the Institute or from the National Board of Examinations or from any other Board recognised by the Institute.

Only those who satisfy the minimum qualifications prescribed are advised to apply for admission. Those who expect to qualify before the date of selection may forward their application by the closing date prescribed. However, they will not be called for the selection test unless evidence of having obtained the necessary qualification is produced latest by 27th October, 1990.

Candidates with more than two failures in the university or equivalent examinations are not eligible for admission. Admission to the programme will be based on the candidate's previous academic record and their performance in the selection tests to be held at the Institute on 30th November, 1990 and 1st December, 1990.

Reservation exists for SC/ST candidates as per the rules of the Institute. Suitability for admission (against reserved seats) will be assessed independently of others. In case of non-availability of suitable SC/ST candidates the seats reserved will be diverted to general category.

Those selected will be paid emoluments as fixed by the Institute. The present value is Rs. 3150/- plus DA (MD/MS degree holders) and Rs. 2705/- plus DA for 5 year programme candidates during the first year.

The candidates will be provided with accommodation as per Institute's rules and regulations on the matter.

Closing dates

Last date for issue of forms by post: 10th October, 1990.

Last date for receipt of completed form at the Institute (along with non-refundable registration fee of Rs. 60/-). **15th October, 1990.**

The applications received beyond the last date are liable to be rejected.

The details of qualifications, selection procedure, reservation, sponsorship, scholarship and general conditions will be as given in the prospectus for the year 1991.

DIRECTOR

No. Sctimst/Acad/132/PGP/
Dated: 23/8/90.

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

LIBRARY & DOCUMENTATION
6 SEP 1990

National Concerns & Higher Education

D.A. Ghanchi*

Introduction

Education as a planned community enterprise has, among others, a great instrumental value in any social context. Be it a highly developed social system of a first-world country or a severely depressed system of a poor third-world country, education could and inevitably should play a positively promotive role to lead to a progressively better order.

A country like India, on the threshold of momentous changes, with a very powerful pull of a past that too often proves inhibitive, has a greater reason to rely on education as an empowering force to meet the challenges posed by a badly fractured context generated by palpable contradictions. We see here a pressing urge to modernise in the face of an ever-increasing and self-feeding pull-back of revisionism. We have given ourselves a constitutional directive to usher in an egalitarian secular order, but our efforts at it have been constantly checkmated by irresponsible regressive tendencies generated by rabid communal and fundamentalist forces. We have sworn for a free, democratic order based on justice, equality and liberty, but the actions of many of us smack of rank feudalism and authoritarianism that would put to shame the practitioners of these evils in the middle ages.

The contemporary Indian scene has thrown up many a challenge to the very assumptions the Indian polity is based on, to the values which India's composite culture has cultivated over centuries, and to the political philosophy the country has been wedded to ever since it attained freedom from an alien rule.

The chief cause of worry for the country facing these challenges is that the fabric of the composite Indian culture is being increasingly subjected to severe strains by forces inimical to the integrity of the country. The eighties saw a gradual build-up of these forces and their increasing intensity. The nineties have opened with a virtually exploding situation, particularly in the North and the North-East. The rest of the country too has witnessed violent upheavals for various reasons. It seems there is an irreversible drift towards a precipice. Nothing could be more fatal to the very existence of a civilized society like India wedded to the principles of free, pluralistic, peaceful and progressive democracy.

The Diagnosis

Various theories are being put forth to explain this dangerous phenomenon in contemporary Indian life. It is said that competitive manipulative politics played by power-seeking parties is responsible for generating forces of disharmony, violence and disintegration. It is also said that there is a built-in antagonism between various religions and beliefs obtaining in the country now. It is also said that the only way to ensure national unity, integrity and harmony is to have one culture

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**Pro-Vice-Chancellor,*
North Gujarat University, Patan, N.G.

hegemony steam-rolling all the diversities and dissent into a regimented unity. It is also said that the abject poverty that we find among about 40% of the people living below the poverty line, the depressed existence that a large number of people live steeped in the mire of illiteracy, superstition and cultural deprivation and the political culture of money, muscle and mafia that has come to dominate the public life have also conspired to drive people to resort to violence, terrorism and crime to iron out their differences and settle their disputes.

All this is a superficial diagnosis of the malady that lies deep in the psyche of the people. The manifestations in the form of symptoms, be they caste or communal rifts, atrocities perpetrated on the weaker sections, be they minorities, women, scheduled castes, scheduled tribes or even children, be it a terrorist activity aimed at individuals or groups of specific people or even state are just the sick exterior of a simmering interior.

Very unfortunately, therefore, a wrong diagnosis has led to the adoption of a wrong remedial approach—that of law and order. The inner forces working in the minds and hearts of the people have been mostly neglected by being conventiently labelled as anti-social or anti-national tendencies. As a consequence we find a strange spectacle of millions of rupees being spent on defence, law and order and emergency administration without ensuring reasonable peace, security and harmony.

It, therefore, behoves us to subject ourselves to an honest analysis, so as to identify the nature of the ailment and adopt an appropriate therapy to treat it and try to restore the original health to the system.

The Malady

As a people having been subjected to domination both by native as well as foreign rulers for a long time a peculiar mental make-up of subservience admixed with authoritarianism, conformity attended by rebelliousness, sychophancy accompanied by self-esteem, and frustration associated by a revolution of rising expectations has come to be developed. Democractic structures and procedures ushered in since independence have been considerably influenced by this inherited mind-set. Consequently we find a bizarre scenario where there is repeated miscarriage of the democratic process in settling issues and disputes, in arriving at decisions and implementing them with due regard for the rule of law.

Basically therefore, the malady lies in the minds and hearts of the people. Their cognitive and affective domains have been considerably vitiated by a number of forces, past and present. Some of the manifestations of the vitiation are as follows:

(1) People fall on easy prey to propaganda, maybe political or denominational. Therefore, their decisions and actions tend to be other-directed, rather than self-directed. Not unoften has many a result of elections to Panchayats or to Parliament reflected this trait. So also have many agitations, disturbances and riots been a consequence of this cognitive-affective limitation.

(2) There is an observable psychological behaviour of dependence on the higher-ups in the hierarchy whether in the family or a caste or a social club or a political party. The people tend to delegate the right to think to the elderly, or a boss or a leader. This makes it convenient for them to avoid the responsibility to think, to act and to own the consequences on one hand, and on the other hand to find out a scapegoat for their failures. It seems, after independence, our people have become almost past-masters in the arts of evasion and prevarication, and developed a pastime for mutual deception, be they politicians, academicians, rulers or the ruled!

(3) Very often our behaviour is generated and governed by cheap sentimentalism rather than sound logic, or by an appeal in the name of religion (pseudo or real) or a religious person, a cemetry, a crematorium or a place of worship a caste, a community, a language, or even a symbol!

(4) Scientific temper is still a rare intellectual commodity for many of us, not just the so-called illiterate, superstitious, backward people, but even the elites in all walks of life. The casualty is dynamic, honest and bold thinking and a goal-oriented action.

(5) Finally, whatever cognitive-affective behaviour most of our people display in private or in public life gets moulded into a narrow groove mostly abjectly self-centred ignoring wider interests of the other fellow, or the community, or the country. Intellectual blinkered thinking leads to ethical perversions with which the country is now replete.

It is, thus, a deep psycho-moral malady that the country is afflicted with. No independent country with such a malady eating into its vitals can legitimately hope to survive for long as a nation internally integrated, harmonious and forward-looking and externally respected as an effective partner of the international community.

The methods tried out

We have provided for an excellent infrastructure to run the system. We have, for example, one of the most meticulously written constitutions to be found anywhere in the world. With more than 60 amendments inserted in it, it stands as a powerful tool to make the country great in many respects provided the human agency operating it is competent to do so morally and managerially, which, unfortunately, leaves much—very much—indeed to be desired.

We have made laws to govern almost every conceivable aspect of people's lives. However, we cannot legislate morality, patriotism or accountability. It all depends on a sensitive and dedicated enforcement agency on one hand and a well-informed and responsible public opinion on the other. There is much to be desired on both these scores, too.

We have created numerous structures at national, state, and local levels in different spheres of activities. There are ministries, corporations, organisations and institutions to manage our affairs. There are some that have even won global recognition. There are some that have proved a mill-stone around the neck of the nation, thanks to the failure of the human agency operating them.

We have adopted a curious mix of work styles all these years. The most modern science and technology coexist with superstition and unreason of the dark ages! Democratic sentiments can be found overlain with autocratic practices. Lofty egalitarianism can be seen cowering under brazen selfishness. Law and disorder have a strange comradeship in our system. A sort of working anarchy thriving on adhocism and expediency has been ingrained in the system as well as the psyche of the people.

The methods tried out so far have led us where we find ourselves now. The tragedy is that we have lost the fine sense of sensitivity—moral, intellectual, emotional and social—that goes to make for a civilized, refined and self-fulfilling human existence.

Catalogue of concerns

Over the years since 1947, the country, having passed through several moral and political vicissitudes, has accumulated a veritable array of concerns of varying intensity and gravity. They are:

(1) *Political concerns:*

- Threat to the integrity and unity of the country
- Instability of the governments at the centre and in some states
- Disruption of the delicate balance between the legislature, executive and judiciary
- Distortion of the rule of law for party gain or personal aggrandisement
- Emergence of manipulative power-centred political processes
- Dominance of muscle power and mafia force in political field at all stages
- Blurring of the dividing line between democratic political activity and autocratic hegemony

(2) *Economic concerns:*

- An increasing disequilibrium between population growth and economic development leading to more abysmal poverty and deprivation for millions
- Inequitous distribution of fruits of development leading to regional and sectoral imbalances, thereby giving rise to the phenomenon of exploitation of weaker sections
- Emergence of a culture of extravagance marked by conspicuous consumption by a few entailing squandering of valuable resources meant for the survival of many
- Rising unemployment on one hand and declining per capita productivity on the other both cumulatively resulting in social unrest and increasing impoverishment
- A frightening debt trap impinging upon the fragile economy held hostage by black money, machinations of multinationals and discriminatory trade practices of big industrialised countries
- Ecological degradation, pollution and consequent hazards to human life

(3) *Social concerns:*

- A fractured society being subjected to frequent convulsions caused by fissiparous tendencies, communalism, casteism, regionalism, gender discrimation and urbo-rural schism
- Enormous social cost of economic development as seen in the form of disruption of joint family system, urban explosion, slums, child abuse, drug addiction, violence and crime
- Widespread illiteracy, an ever-increasing illiterate population and the consequent subtle disentitlement of a large segment of people, particularly the rural and tribal people, women and weaker sections

(4) *Cultural concerns:*

- Rise of reactivism generating forces promoting fundamentalism, revivalism and reactionary tendencies all of which distort the ancient cultural heritage of liberal humanism, tolerance and pluralism
- Emergence of a culture of permissiveness, particularly amongst the younger generation and the nova riche, thanks to the role of the

media in this connection promoting rank consumerism
— A pervasive climate of cultural cleavage tearing asunder the Indian mind because of contradictory pulls of eastern morality and western consumerism
— A philosophical confusion about the goals of human existence, about the means to realise these goals, and about the ultimate nature of truth one should strive for.

Education and the national concerns

Education being a vital input in the process of the development of man, is expected to equip him to operate effectively and successfully not only in normal circumstances but also in trying times like those created by challenges and concerns. And decidedly the set of four multi-pronged concerns constitutes no mean threat to the intellectual, moral, spiritual and social personality of the average Indian citizen, more so the young men and women pursuing higher education and thereby preparing themselves for their respective leadership roles in the years to come.

What, therefore, can be the agenda of higher education to address these national concerns? The answer to this question depends upon several variables like the perception that we have of the role of higher education in national life, the willingness of different participants to play their part in the cooperative venture, and the way in which the roles are played, the responsibilities are shared, and the entire job is evaluated.

Given these variables, it is possible to think of the agenda in terms of the following factors:

(i) The curriculum
(ii) Teaching-learning activities
(iii) The out-reach programme
(iv) Teacher role

The curriculum

The area of curriculum should be extensively utilised to cultivate traits of awareness, sensitivity, commitment and intellectual honesty as well as courage among the university students. The following measures should be taken in a suitable time-frame for the purpose:

— Improvising the present curriculum with topics of studies of immediate current relevance like the unrest in Punjab and Jammu & Kashmir;
— Introduction of collateral studies in critical areas like urban pollution in the discipline of chemistry or sociology;
— Infusion of practicums in the erstwhile purely scholastic subjects like history, literature, philosophy etc. The practicums may be in the form of an action research or a field work or a visit, followed by a report or a project, say, to a city slum;
— Phased restructuring of a course to include the component of application in a social context. For example, a restructured curriculum of Economics can be an exciting ground of experience in rural reconstruction, family planning, consumer education and self-employment; and
— Tie-up of the curriculum with business, industry and government leading to a continual curriculum renewal movement so as to make education a meaningful as well as gainful pursuit. For this purpose curriculum research and development cells must be instituted both at the university and individual colleges with autonomy for the latter to incorporate specific concerns in their curricula.

Teaching-learning activities

The present scene of the teaching-learning encounter in the classrooms is dismal. It does not have much to do with the four major national concerns, either in terms of delivery of knowledge or inculcation of copeability skills or a moral attitude to face the challenges squarely. We need to change this by injecting the following elements:

— By correlating day-to-day teaching with specific concerns— local, state and national. Almost every micro-unit of an academic subject can be projected into corresponding problems of the contemporary life;
— By developing modules on specific syllabus areas so as to provide integrated learning experiences to cooperative groups of learners;
— By adopting the Project Method approach which would require students to make learning personally satisfying as well as socially productive; and
— By throwing open the classroom to the inflow of ideas from business, industry, government and society at large through open-house methods. In emergencies like political destabilisation or a communal holocaust, the whole institution could be swung into action for a specific period for a definite target. A social disaster would then be a teaching-learning crusade.

The out-reach programme

Education has to carry out a social mandate, and so it should reach out into the community in as many ways as it can. Activities like the following ones should form a part of its regular programme.

— Multi-level linkages based on mutuality should be forged with the media, the various formal organisations in the society and the activist groups, and the teachers, students, and infra-structures of educational institutions be mobilised for addressing specific national concerns;

— The traditional agencies like the NSS, and NCC and students' organisations should be streamlined in the light of the various concerns and issues facing the community and the country as a whole. They must be transformed into think-tanks and reservoirs of dedicated human resource geared to the need of the hours and ready to undertake result-oriented service projects at the shortest notice;

— Initiatives for specific crisis like droughts, floods, inflation, dowry-deaths, fundamentalism, booth-capturing, etc. should be evolved and implemented. Action brigades of students and teachers should be pressed into service; and

— It is imperative to impart training in skills of leadership, of productive work and of crises management to both teachers and students on an on-going basis. Placement in leadership roles in slums, in depressed rural areas, among disentitled social groups and in disaster-stricken places must be a requirement for all.

Teacher role

Education for national concerns requires a teacher who, besides being a constant learner, both in his discipline and profession, is a person with abounding social sensitivity and an unswerving commitment to make things happen individually and collectively. The country expects every teacher to do the following for the purpose.

— To be actively aware of the various national concerns and transmit his awareness to his colleagues, students, and the community through various means like classroom teaching, interfaces, colloquia, and media;

— To make his day-to-day teaching less syllabus-oriented, much less examination-centred and more life—centred, and that too passionately and sympathetically so as to conscientise the learners and the colleagues;

— To be a person of action in the classroom, in the campus, in professional organisations and in the community, and activate his students and colleagues to undertake action programmes in areas of critical concern, maybe social service, community welfare, public resistance movements, etc., and

— To link all his scholastic, intellectual and professional pursuits with national concerns through action research, case studies, community work and collaborative projects in activism. Thus he will provide a model of behaviour and work to colleagues and students.

Conclusion

To sum up, viewed in the context of national concerns, education in a developing country like India, is required to play an interactive role in the process of development and change. Higher education, for that matter, has a greater obligation in this respect, it being charged with three higher-order tasks, viz. generation of new knowledge, renewal of old knowledge, and creation of a better social order. □

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Towards an Enlightened and Humane Society

The Government of India appointed on 7th May, 1990 a Committee under the Chairmanship of Acharya Ramamurti to review the National Policy on Education (NPE) 1986. Based on its deliberations the Committee has issued a Perspective Paper on Education entitled, "Towards an Enlightened and Humane Society" that contains ideas and thoughts that the Committee could bring to bear on the problems of education as perceived by it. While releasing the Perspective Paper at a Press Conference on 6th September, 1990 the Chairman Acharya Ramamurti said that it was only a discussion paper which he hoped people will read, closely scrutinise the contents and let the Committee have the benefit of their ideas and thoughts before it finalised the report.

We are happy to carry the full text of this Perspective Paper together with the appeal made by Acharya Ramamurti for the benefit of our readers who are welcome to send their responses before October 10, 1990 to the Member Secretary, NPE Review Committee, Department of Education, Ministry of Human Resource Development, Govt. of India, Shastri Bhawan, New Delhi-110 001.

THE APPEAL

When on the 7th May, 1990 the Government of India announced the appointment of a Committee 'to review the National Policy on Education (NPE), 1986', there were people who asked why this hurry in instituting a review even before the expiry of the stipulated period of five years.

The question is legitimate. But the reasons that influenced the decision of the Government have been given in detail in the government's resolution itself (which is quoted in the Prologue in full).

Briefly, the basic concerns are these three:

one,	the Right to Work which is proposed to be enshrined in the Constitution;
two,	the unity and integrity of the nation that are seriously threatened;
three,	the impoverishment of the inner man in India.

While these concerns may not be new except the challenge of the Right to Work a great difference has come about during the last few years.

The concerns and problems that remained unresolved have over the years produced an extremely difficult situation leading to mounting unemployment and violence of all kinds that is becoming a way of life. The nation is already in the grip of a total crisis. The Challenge of Education of 1985 has now become a life-and-death question—a question of the very survival of the nation.

In the total crisis of the nation education has its full share. But the sad fact is that the system of education as it prevails in the country today seems to have lost the capacity to find a solution to the crisis of many dimensions it is faced with. If that be true, the reasons are not far to seek. Our education is confined to the four walls of a school or college. It is tied down to text-books and examinations. Even then, the books are unreadable and the examinations totally unreliable. Our education has failed to equip our students with any productive skills. It cuts them off from their natural and social environment. They become aliens to their own community. Worst of all, they lose faith in life itself, and all that it should mean. How can an education such as this ever become a fit instrument for national reconstruction, or inspire the youth to any higher endeavour? One is sometimes led to ask, is not no education better than bad education?

What we want is a new education. We want education for life. We want education for all, not for a chosen few. This demand was made by the Kothari Commission a quarter of a century ago; it was repeated by the New Education Policy, 1986. But the demand remains unfulfilled. How long are we to go on repeating it, and be satisfied with a patch here and a patch there?

The need of the hour is that education truly becomes a people's movement, and it ceases to be a routine departmental activity left to the initiative and judgement of the people at the desk, controlled and guided by those far removed from where people live and work. Only then will education become a preparation and discipline for life, a liberating force. Integrated with life and work, it will make the Right to Work a reality. Education will then develop the power to fight, in the minds of men and women the battle against pride, prejudice and passion and forces that destroy cherished values and the best interests of the common people. This is an age of science and democracy. But can science and democracy survive without creative education which places human being at the centre and which is available to everybody throughout life? This is what real education should mean.

In its introduction the Education Policy of 1986 says, "There are moments in history when a new direction has to be given to an age-old process". This is a truth of great significance. The authors of the New Education Policy, 1986 felt that such a moment had come in 1986 with the challenges of the twenty-first century on the horizon. Four years have gone by and only ten years remain for the new century to dawn. These ten years are crucial for us. We must now give up for ever the legacy of the Macaulay tradition, and start afresh. What we do in the next ten years will largely determine how we shall face the challenge of the new century.

The Perspective Paper that we are herewith presenting to you in all humility contains the ideas and thoughts that we as a Committee could bring to bear on the problems of education as we perceived them. We have drawn upon the great tradition of India, experiences and experiments of pioneers in our own country and abroad, and great thinkers like Tagore, Gandhi and others. I do hope that you will find time to read these pages, closely scrutinise the contents, and let us have the benefit of your ideas and thoughts before we finalise our report. I have no doubt that if we put our heads together, we shall discover the right direction and the first correct steps. The future belongs to those that dare and act.

ACHARYA RAMAMURTI
Chairman,
Committee for Review of National Policy
on Education (NPE) 1986.

Towards an Enlightened and Humane Society

I
PROLOGUE

At the time of the announcement about a new education policy and the issue of a public document called *Challenge of Education,* in 1985, much public expectation was raised. In a democratic society, the practice of imparting education and the policies informing it, must have the support of the people. Such support can be ensured only if our people see education as bringing benefit to them in appreciably concrete ways. It is in order to examine the National Policy on Education (NPE), 1986 and its implementations in terms of concrete benefits to the people that Government of India have constituted a Review Committee. The following extract of the Resolution constituting the Committee spells out the specific concerns of the Government:

> "Despite efforts at social and economic development since attainment of Independence, a majority of our people continue to remain deprived of education, which is one of the basic needs for human development. It is also a matter of grave concern that our people comprise 50 per cent of the world's illiterate, and large sections of children have to go without acceptable level of primary education. Government accords the highest priority to education—both as a human right and as the means for bringing about a transformation towards a more humane and enlightened society. There is need to make education an effective instrument for securing a status of equality for women, and persons belonging to the backward classes and minorities. Moreover, it is essential to give a work and employment orientation to education and to exclude from it the elitist aberrations which have become the glaring characteristic of the educational scene. Educational institutions are increasingly being influenced by casteism, communalism and obscurantism and it is necessary to lay special emphasis on struggle against this phenomenon and to move towards a genuinely egalitarian and secular social order. The National Policy on Education, 1986 (NPE), needs to be reviewed to evolve a framework which would enable the country to move towards this perspective of education."

2. The struggle for survival is more urgent for many people of India than educational needs. Therefore, education and its planning must be organically linked with the larger socio-cultural, economic and political context. Specifically it must be linked with live issues of development. Then it will be possible for education to play a catalytic and interventionist role. Only then.

3. Almost half of the children in the age group of 6 to 14 either do not enter the school at all or drop out at an early stage. Of these, according to a recent National Sample Survey, about one-third to one-half find school either boring, irrelevant or threatening (i.e. failure in examinations). Almost another 40 to 45% of them have to stay away from school due to strong economic compulsions and the demands of home and family life. Only about 5% of the children manage to reach the higher secondary stage and a smaller percentage go on to higher education. A negligible number from the disadvantaged sections are able to get admission to the excellent professional institutions, due to poor quality school education apart from their socio-economic backgrounds. The calibre of those making it to excellent institutions might have perhaps been better had they been drawn from a larger social base of children. Efforts to link education with life have not met with any appreciable degree of success and our goal of attracting all children to the schools and increasing their retention has remained largely unfulfilled.

4. The school curricula have tended to be rigid and stagnant, lacking in responses to new methods and innovations in educational practice. There is also all-round concern regarding the load of the school bag.

5. It isn't as though we haven't had innovations and initiatives in the field of education. Today we talk of the need for a more accommodating and shortened school day for the working children and we have had the *'pahar pathshala'* experiment in Rajasthan in the sixties. Our teacher-training courses do not seem to draw upon our own experiments in education for the purpose of enriching the theories of teaching and learning. The educational experiment of Tagore's Sri Niketan, relating education with rural development and of Gijubhai Badheka in Gujarat about teacher education, are two cases in point.

6. In our system of education we are, by and large, ignoring the rich treasure of traditional knowledge and wisdom derived often empirically over several hundreds of year or longer. Such traditional knowledge and wisdom are, available in diverse areas like agriculture, land management, watershed planning, forestry, ecological balance, housing, medicine, cottage industries etc. These need to be integrated with the content and process of education.

7. In the case of adults, inability to read and write has not necessarily meant lack of education. The illiterate may have numeracy skills needed for life situations and sensitivity and capability of a high order to cope with very difficult conditions. They are also in possession of a whole range of vocational skills needed at home and in the area of work, quite a detailed knowledge of the local natural resources and environment and an understanding of the social structure and of the historical and cultural traditions. Hence attempts at emphasizing adult literacy as such, as constituting education would be misplaced, the clear perception being that an *illiterate adult* is not necessarily an *uneducated person*. The intention is not to romanticise illiteracy but rather to underscore the need to redesign adult education programme meaningfully. What is of far greater importance, however, is to ensure that all children receive school education in this decade so that they do not grow to become illiterate adults in the next century.

8. While we have many achievements to recount at the higher levels of learning, the constitutional mandate of providing elementary education to all till the age of 14 has remained a teasing illusion. And this, in spite of such huge quantitative expansion of primary schools, so as to make available a primary school within one kilometre from the residence for every child. The educational pyramid has no solid and strong base to stand on even today, not to speak of the poor quality of education itself. In fact, the pyramid is precariously balanced upside down. The decreasing proportion of allocations to elementary education over the last seven Plans has aggravated this structural imbalance. (The share of Plan and Non-Plan allocations for Elementary Education in the States/UTs has remained stagnant in recent years. As a percentage of GNP, share of this sector of education has come down since 1985-86). Nor have the attempts to provide a complementary structure, through non-formal education and adult literacy helped in the rectification of this imbalance, though these programmes do involve substantial financial outlays.

9. The real challenge is to provide and ensure that an education of comparable quality is made available to all through the evolution of a Common School System. The challenge is also one of identification and removal of elitist aberrations that have crept into the educational system over the years; and of remedying the erosion of community involvement in making the educational system work. Are we committed to stop "tinkering with the existing situation, and moving forward with faltering steps and lack of faith", and to act on the conviction that "Indian education needs a drastic reconstruction, almost a revolution"? (quotes from Dr. D.S. Kothari's Foreword to the Education Commission Report, 1964-66).

10. Despite many policy statements relating to improvement of higher and technical education, the majority of institutions at this level have not fulfilled their expectations. There has also been a mushroom growth of substandard colleges which are of little academic or socio-economic value.

11. The rural areas in general, and the tribal areas in particular, have suffered in terms of resources, personnel and infrastructural facilities. This phenomenon of regional disparities in education and development has acquired a major political dimension on the Indian scene. It is reflected in the regional and sub-regional movements. (Incidentally, it is noteworthy that one of the stated objectives of bringing Education under the Concurrent List of the Constitution was minimisation of educational disparities).

12. There is a growing concern about the increasing tendency to centralise and bureaucratise initiatives decision-making and planning in all sectors including education, both at the level of the Central and State/UT Governments. This has resulted in steady erosion of the role of the teacher and the community in educational planning and development. While it is accepted that, in the context of education being in the Concurrent List of the Constitution, the Centre's role has assumed special significance, it is also widely felt that time has come to judiciously limit and redefine this role.

13. Education is stated to be an investment for the present and the future, in NPE. But this in no way is reflected in plan allocations. In fact, education gets relegated to the back-stage as a 'social service' item and does not seem to be perceived as a significant instrument to bring about national development. The inability of the Government to provide an increased percentage in the educational budget of the 7th Plan and the promise of reaching at least 6% of GNP in the 8th Plan is a case in point. Indian ranks 115th amongst the countries of the world in terms of investment in education as percentage of GNP. For a people that set such store by knowledge as a means of liberation (sa vidyā yā vimuktayē), this is indeed a strange paradox.

II

POINTS OF DEPARTURE : FOCUSSING ON ISSUES

The Review Committee has reached a broad consensus regarding the manner in which NPE, 1986 needs to be modified and the issues on which focus should be directed. These include:

(i) An integrated and holistic view of education should be taken avoiding the dichotomies such as formal and non-formal, academic and vocational, technical and non-technical education which inhibit attempts at radically over-hauling the system.

(ii) In the scheme of educational development, the human being is not to be treated as a mere 'asset' or 'national resource' because such an approach is utilitarian. The human being is to be developed into much more than a mere asset by bringing into play the humanistic, liberal, social, cultural and spiritual functions of education.

(iii) School—the base of the educational pyramid—is to be the main instrument for moving towards the goal of universalisation. All essential resources, both financial and intellectual, should be made available to the school to enable it to REACH OUT TO the children outside the school, at least two thirds of whom are girls. The school should OPEN-UP AND NON-FORMALISE in creative ways. This would be preferable to building up an exclusive parallel system of non-formal education for the poor and working children. Creative non-formal education, responding to the need-patterns of dropouts or left outs such as the working child, girls who cannot attend schools and children in unserved habitations or social situations can continue to play a supportive and, more importantly a challenging role in society during the transitional phase so that there is a continuous pressure on the school to OPEN-UP AND NON-FORMALISE itself.

(iv) Early Childhood Care and Education (ECCE) is to be made an integral part of planning for primary education.

(v) The content and process of adult education, as distinct from adult literacy, is to be reorganised. The questions of survival, development and justice are to be interwoven into the context, pedagogy and learning situation of the adult, letting literacy come in organically in the process when, and if, it becomes the felt need of the adult learners. This understanding would help in avoiding the disproportionate emphasis on literacy campaigns. A major objective of these campaigns should be to enthuse the adult illiterates to send their children for school education. Other objectives may include education for democracy and Panchayati Raj and for eschewing violence, casteism, communalism, gender bias and all other forms of discrimination.

(vi) The principle of equitable opportunity for all as a path of educational development in the Indian context is to be preferred to segregated nurturing of talent amongst a few in separate schools. This will ensure an egalitarian social order, as well as scope for achieving the nation's full potential for 'excellence' by broadening the social and ethnic base of education. Indeed, in the ordinary course, the teacher does identify and respond to talented children. Therefore, the appropriate course would be to specially train the teachers to enable talented children to learn at a faster pace without segregating them from other children and involve them in group or peer learning processes that encourage non-competitive environment. In this view, in any case, further encouragement of Navodaya Vidyalayas may not be justified.

(vii) In order to promote 'social cohesion and national integration', a Common School System is to be built up over a ten-year time-frame, both through persuasion and essential legislation. As a first step, the quality of government, local body and aided schools is to be improved, so as to transform them into genuine 'Neighbourhood Schools'. The question whether and how the Common School System should gradually reach out to include private schools as well should be examined.

(viii) Education for women's equality is to be redesigned with a view to:

(a) create essential conditions for all girls to successfully participate in school education and reduce drop-out rate amongst them by linking an effective programme of Early Childhood Care and Education with every primary school of India, at the same time providing in the community a complex of support services for making available drinking water, fuel, fodder and health care; and

(b) remove gender bias and eliminate sex-stereotyping from the structure, content and process of education by taking into account the broader social framework which has so far denied empowerment of women.

(ix) The phenomenon of regional disparities is to be tackled with a view to allocating additional intellectual and financial resources to educationally and socially backward areas to compensate for the past deprivations of the people, mostly belonging to scheduled caste and tribes, other backward communities and minorities, (particularly women amongst them) living in these areas and to decentralise planning and implementation through area-specific and disaggregated perceptions of what and how it needs to be done.

(x) Use of mother-tongue as a means of facilitating learning, self-expression and promotion of social identity of the child, at least in the initial stages is to be ensured, and if the mother-tongue is different from the State regional language, then provision for switching over to the latter at an appropriate stage of elementary education is to be made too. The medium of instruction at the tertiary level is to be such that it does not act as a deterrent against teachers and students joining higher educational institutions from all over the country.

(xi) Dynamic interaction amongst the regional languages of India is to be facilitated with a view to promoting horizontal mobility and interaction amongst people and not just among those few who have access to English, thereby strengthening the process of social cohesion and national integration.

(xii) Socially Useful Productive Work (SUPW) is to be made an effective medium of learning, sensitisation and of developing problem-solving skills and creativity for all students at all stages of education with a view to EMPOWER PEOPLE FOR WORK. The objective is to ensure that SUPW does not remain a ritual as has often been the case. In order to achieve this and an all-round improvement of quality of education at secondary and tertiary levels, we need a further direction of focus on the following:

(a) Integration of the 'hand', 'head' and 'heart' to ensure an education that would not alienate the students from the family, community and life.

(b) Vocationalisation of secondary education (classes IX to XII) for all with a vocational component built into the curriculum as an integral part, and with provision of additional vocational components for those who opt for job placements or self-employment.

(c) Operational linkages between the 'world of school' and the 'world of work' by institutionalising the concept of 'work benches' and 'practice schools' for vocationalisation.

(d) Opening up the system through provision for multiple entry and exit points for those who wish to join the 'world of work' and return later for further education or upgradation of skills.

(e) Introduction of modular courses and credit accumulation with a view to allowing maximum flexibility to the students to select a combination of courses according to their orientation and needs.

(f) Building up a system of comprehensive and continuous internal assessment for promoting learning and midcourse correction, with a commitment to replace the annual public examinations at all stages of education from primary to tertiary in a given time-frame, admissions to higher stages of education being based on separate entrance examinations.

(g) De-linking degree from jobs through the instrumentality of letting user agencies build up their own testing mechanisms and modifying the recruitment policy of the government and the public sector accordingly.

(xiii) The quality of higher and technical education is to be improved in real terms not only to make them relevant to our society as it is, and as it is envisaged, but also to cater to the needs of competitive industry, indigenisation of technology and advanced science and technology including Research and Development therein and their application.

(xiv) In the colleges and universities, the curriculum and educational process are to be dynamically and integrally linked to issues of regional development and improvement of school education. The objective is to strive for balance between the regional expectations from these publicly financed institutions and their global objectives in education and research. This exercise is to be distinguished from the extension function of the universities. This would require a complete reorganisation of academic life in colleges and university campuses with a fresh direction to the faculty and the students. In the long run, this involvement in development would endow the colleges and universities with capability to guide planning and assist people's initiatives, thereby infusing life in the campuses with a sense of societal relevance.

(xv) The emphasis on social science research in the higher education sector has often been halting and hesitant, with inadequate financial support, though there are many higher education research institutions in the country, not to speak of research being undertaken in the various universities. Alongside the importance assigned for modernisation of science & technology institutions and education, there is need for promoting orderly growth of higher education research in social sciences too. The area of social sciences needs to be developed as it generates new thought processes and creative thinking. It also facilitates insights into the nature and direction of development which are vital for evolving new frameworks for fresh policy thrusts. There is also need for study of, and research on, our classics not merely for their literary eminence but also for the dissemination of their underlying values and traditions.

(xvi) Full scope is to be provided for diversity in content, and pedagogy according to the socio-cultural milieu of the school, college or University, while giving due regard to national core curriculum as well as to the objective of liberation from parochialism, self-centredness, obscurantism and social fragmentation and elimination of casteism and communalism from national life.

(xvii) In recent times there has been perceptible universal decline of basic moral values. This phenomenon acquires a special poignancy for us in India, considering our great civilization and heritage. Our education institutions which have not escaped the impact of this pervasive value decline, have a special responsibility to respond to the situation with great concern and subtlety, playing a vital role in value education. This cannot be just in terms of special classes or lectures in morality or in terms of mechanical, text-book-based learning methods. It should become an integral part of the entire educational process and school climate. Values such as democracy, secularism, socialism, scientific temper, equality of sexes, honesty, integrity, courage and justice (fairness), respect for all life forms, different cultures and languages, etc. constitute the mosaic of values which is vital to the unity and integrity of the country. If the process of education is not informed by these basic values it loses its intrinsic merit altogether. All curricular and extra-curricular activities in schools and colleges should convey this message with clarity and resolution. Not to be lost sight of, is the need to remind ourselves that Right to Work is the correlate of duty to work.

(xviii) School education, having to cater to the millions of children virtually at their door-steps, and in diverse socio-cultural conditions, has to be freed from the stranglehold of 'higher levels' of planning and management. 'Local area planning' as envisaged in the Eighth Five Year Plan Approach Document approved by the National Development Council is indispensable, the teacher and the local community being given the centre stage. The Head of the institution has to have meaningfully delegated authority. The schools should have autonomy and be liberated from the line hierarchy and the policing by the inspectorate system. Internal democracy in each institution is to be ensured. A cluster of educational institutions at different levels, primary to tertiary, should come together to form Educational Complexes. They should mutually interact, pooling material and intellectual resources together. They should internally deal with all educational activities (formal, non-formal, adult education etc.) in their varied dimensions like planning, implementation, monitoring, research and innovation, and teacher training. The grassroot level official development agencies should undertake school-centred activities in co-ordination with Educational Complexes, benefiting mutually in the process.

(xix) Educational management within the Government is to be viewed afresh in the new decentralised perspective proposed above. All major resource institutions and standard setting agencies at the Central, State or District level may redefine their respective roles so as to strengthen institutional capabilities at the local levels all along the line, rather than building themselves up into remote control agencies. This would call for significant self-restraint on the part of these higher level agencies. Academics are to be involved intimately with educational administration at all levels. Flexible systems are to be evolved for ensuring that the administration has the sensitivity to continuously respond to the initiatives, demands and innovations by the decentralised structures and processes.

(xx) The major innovative measures proposed for non-formalising formal education, empowering people for work, equalising educational opportunities, for women's education modularisation and semesterisation of courses, replacement of the public examination systems by continuous comprehensive internal evaluation, decentralised management of education and linking university courses with development call for the teacher being placed centre-stage. In this context, the entire question of the status of teachers, their recruitment, service conditions and training would have to be examined afresh.

(xxi) Ever increasing tension amongst the teacher and student communities is symptomatic perhaps of lack of an adequate grievance redressal machinery. This should be viewed in the context of diversification of educational disciplines, overall expansion of higher education and consequent increase in personpower, disputes concerning admissions, malpractices in examinations, etc. Certain Court rulings have also resulted in a situation of lack of clarity about the status and rights of the teachers in particular. The Law Commission has gone into the campus situation in the context of decentralisation of administration of justice and given certain recommendations regarding 'tribunalisation of justice' in the higher education sector, including provision of participative mechanisms. It would be appropriate to go into the adequacy and feasibility of implementing these recommendations.

(xxii) Substantially larger allocations for education in the Central as well as State budgets are to be secured. It also needs to be ensured that the resources are earmarked for reducing social and regional disparities and for widening educational opportunities. By implication the intra-sectoral distribution of the allocations should, apart from being rational also be consistent with considerations of equity and social justice which are sought to be secured through the revision of Education Policy. New modalities of raising resources are to be explored. This should include the various developmental departments of Central and State Governments coming together, aggregating their educational components and offering additional resources to support school education through the Educational Complexes. In this way, school education would come to be a multi-sectoral responsibility.

(xxiii) The avowed objectives of bringing Education into the Concurrent List of the Constitution have included universalisation of elementary education, removal of educational disparities etc. While, Centrally Sponsored Schemes for achieving these objectives may or may not be justifiable, the Eighth Five Year Plan Approach Document approved by the National Development Council emphasises local area planning. Therefore, the on-going Centrally Sponsored Schemes would also need to be transferred to the States. However, sudden disruption of the initiatives already taken in critical areas should be avoided. As a rule of practice, Centrally Sponsored Schemes run for a full five-year Plan period. The on-going Centrally Sponsored Schemes started in pursuance of NPE 1986 have been effectively under implementation only for two years. They may continue till the end of 1992-93. The status of implementation of these schemes may also be reviewed well before the end of that year. In any case, no new Centrally Sponsored Schemes may be initiated unless they be for the purpose of securing decentralisation of educational management at the grass-root level.

(xxiv) Voluntary organisations and activist groups are to be viewed as expressions of people's own initiatives and of will to bring about social change, rather than as mere implementing agencies of Government for undertaking officially sponsored individual schemes and programmes. It should be ensured that a liberal flow of funds from Government does not dilute the voluntary spirit of these institutions or distract them from their self-chartered courses of action. The preferred path could be for the Government to respond to the initiatives of voluntary organisations with reference to their own programmes, rather than voluntary agencies being mobilised to respond to patternised Government programmes. At the same time, it is equally important that voluntary groups realise the adverse impact that receiving large scale funds from Government and foreign sources is likely to have on their own voluntary character. Transparency in the working of voluntary agencies is to be ensured in order to make them accountable to the community. Decentralised mechanisms for monitoring the work of voluntary agencies at the local level will have to be evolved too.

(xxv) Education is to be built up as a people's movement wherein the Government, Centre and State, may play a supportive and facilitative role. People, through local bodies and voluntary agencies, may assume increasingly larger share of responsibility for creative, innovative and participative management of all educational needs of the area.

(xxvi) 'Universal Declaration of Human Rights' declares that all individuals, irrespective of sex, caste, creed and economic status, have the 'Right to Education'. India rightly, has subscribed to this declaration. The proposed 'Right to Work' may not be capable of being secured in practical terms if 'Right to Education' were not assured as a fundamental right so as to enable people to have minimum levels of learning and competencies. Therefore, the feasibility of a Constitutional amendment to make 'Right to Education' a fundamental right may be examined.

III

SOME MODALITIES

1. Opening up and Non-formalising the School System

The school should be taken as the principal vehicle for achieving universalisation. It should perform not merely for those children who attend but also for those who remain out. Provision of financial resources to the school should be significantly enlarged. Some of the features of a flexible school system could be the following:

- Shifting of the school timings to early morning hours, afternoons or late evenings, as per the convenience of majority of children and in consultation with the community.
- Adjusting school calendar to agricultural activity, local cultural involvements and weekly markets with a view to maximising school attendance.
- Reduction of school hours and increasing learning hours.
- Holding of classes twice in the day where needed—morning for written tradition and evenings for oral tradition and cultural action.

- Special attention to improved methods of learning languages.
- Ungraded class rooms; children at different levels, setting their own pace; provision for supplementary remedial instructions.
- Freedom for first generation learners and working children (particularly girls) to *drop in* the school at any time they want.
- Exploring, inquiring, questioning and enjoying.
- Group learning.
- Peer teaching.
- Relating content and process with environment and community life.
- Continuous built-in evaluation as an integral part of the teaching activity; evaluation being as disaggregated as feasible.
- Community participation in the learning process by inviting people for folk tales, music, puppetry, herbal medicine etc.
- Teachers to be trained on the job according to the internship model.

Introduction of the above features (and more to be conceived) in different combinations in the school opens it up and non-formalises it, so to say. In essence, the school reaches out into the community.

The rigidities of the formal school system can be removed only over a period of time. Even when the quality of education in the school has thus improved, segments of child population may still remain outside the school system on account of economic compulsions or their special social situations. To cater to their requirements, Work/Awareness-oriented models of non-formal education will have to be in operation during the transitional phase. Such models will have their own definitions of minimum levels of learning.

2. Common School System

The Common School system was recommended by the Kothari Commission. It was accepted in the National Policies of 1968 and 1986. The Policy of 1968 states:

> "To promote social cohesion and national integration the Common School System as recommended by the Education Commission should be adopted. Efforts should be made to improve the standard of education in general schools. All special schools like Public Schools should be required to admit students on the basis of merit and also to provide prescribed proportion of free studentships to prevent segregation of social classes. This will not, however, affect the rights of minorities under Article 30 of the Constitution."

The concept has not, however, been translated into action so far. This is one of the reasons for development of exclusiveness in the school system, in the sense that provision of education of a comparable quality to the poorer sections has not been feasible and the affluent sections have had access to education in expensive privately managed institutions. In order to bring the Common School System into practice, the following actions would be required:

- Provision of significantly increased outlay for elementary (particularly primary) education. This would help in the building up of the required levels of infrastructure and quality of education, thereby transforming Government, local-body and aided schools into genuine Neighbourhood Schools.
- Provision of special allocations for improvement of school system in backward areas, urban slums, tribal areas, hilly tracts, desert and marshy areas, drought and flood-prone zones, coastal belts and islands.
- *Ensuring* instruction for all in the medium of mother tongue at the primary level, particularly for linguistic minorities; active encouragement of teaching in the regional languages at the secondary level; and discontinuance of State aid to the schools imparting education otherwise than in the medium of mother tongue/regional language.
- Phased and time bound implementation of the Common School System within a ten year time frame; and essential minimum legislation, particularly to dispense with early selection process, tuition fee, capitation fee etc.
- Exploring ways of including the expensive private schools into the Common School System through a combination of incentives, disincentives and legislation.

3. Empowering People for Work

The design of Vocational Education in the school system has not succeeded in attracting students to the vocational stream. The aim of transforming education to empower people for work is not to be construed as merely one of creating marketable skills. In the entire process of education, a culture of respect for socially useful work and productive labour is to be developed. This, in turn, will facilitate the development of not merely a more relevant knowledge base but also creative intelligence on which one can keep building throughout life. It is only this way that people could be empowered for work. The crucial role of education has to be to equip the students with capability for creative work. The process of developmental planning will have to generate opportunities for work.

The basic aim is to establish effective linkages between the 'world of school' and 'world of work'.

Vocationalisation of education, in the above context, may be redesigned with the following features:

— Work experience/Socially Useful Productive Work (WE/SUPW) should be introduced in the school curriculum at the elementary level as an integral part. WE/SUPW should be linked with various subjects both at the level of content and pedagogy, as distinct from the present practice of ritualistic allotment of a few periods for WE/SUPW.

— Secondary education should not be fragmented into academic and vocational streams. All students may follow a core curriculum which would include an important vocational component.

— Secondary education may not be compartmentalised into lower and higher stages.

— Substantive structural changes may be introduced in secondary education—allowing modular courses, semester system and credit accumulation with flexibility for multiple exit and entry point for the students. (This principle may be extended to tertiary levels as well).

— Schools are to offer vocational courses in varying combinations with academic subjects such as languages, mathematics, sciences and social studies; (academic content is not to be reduced in the process of introduction of integrated courses).

— For students taking up vocational courses at the secondary stage leading to direct job placements or self-employment, provisions may be made for further education in their vocational subjects or in other fields, if necessary, by bridge courses.

— Vocational courses may be re-organised so as to make them relevant to a number of vocations in both the organised and unorganised sectors—particularly the rural sector including the official developmental and social welfare agencies.

— The design of vocational courses should be such as to promote transferable skills in order to optimise vertical and horizontal mobility and to cope with the demands of rapidly changing technologies.

— Course development and training in skills may be matched with the requirements of user institutions/agencies. The personnel of these user agencies may be involved in designing courses, teaching and training. These user institutions/agencies may be utilised for setting up 'practice schools' and educationally supportive 'work benches'. ('Work benches' and 'practice schools' refer to work situations selected for the purpose of giving vocational training and direct experience to students within production units or developmental activities of the official agencies. This arrangements offers to students a more effective educational strategy for vocational experience than what can be arranged within the four walls of the 'class room'. Here the training would revolve around real problem—solving and on-the-job development of skills. Whereas 'practice school' is a more institutionalised arrangement with larger units in the organised sector, 'work benches' can be carved out of smaller units from the unorganised sector as well within the neighbourhood of the school. In both cases, the school would not be required to make any investment on skilled personnel or equipment, the latter being contributed by the 'world of work', with or without a mutually worked out fee.)

— Accreditation of production units and developmental agencies may be undertaken in both the organized and unorganized sectors with the purpose of decentralising the function of certification of students. A system of monitoring the maintenance of standards in the accredited units would have to be evolved.

— Concurrent changes may be made in the recruitment policy of the Government and the public sector to give recognition for the vocational courses.

— Amendments to the Apprenticeship Act may be made to make provision for apprenticeship of students receiving vocational education at the secondary and tertiary levels.

— User agencies may follow their own testing mechanisms so that degrees would be duly delinked from jobs.

4. Examination Reform

The imposition of a centralised Public Examination at the end of various stages of education, primary to tertiary stage, tends to be discriminatory in effect. Examinations have failed to evaluate the students or the system. Instead they have tended to corrode the educational system by distorting the very purpose of education. Examinations are also far too many in number and highly expensive. The Universities are also over-burdened with the conduct of examinations throughout the year. What is needed as a matter of immediate attention is a process of modularisation and semesterisation and entrustment of the function of evaluation to the teachers. Students are to have the freedom of choice of modules rather than whole course packages. Provisions are to be made for credit accumulation and facilities for transfer of credit from one institution to another.

A system of comprehensive and continuous internal assessment, both oral and written, is to be introduced. The prescription of text-books should be replaced by lists of readings. The objective of the system is to promote learning and facilitate mid-course corrections. The effort should be on a committed basis, to replace the annual public examinations at all stages in a time-bound manner. The principle is that 'he or she who teaches' shall lay down the syllabus and also evaluate. Students shall move from one stage of education to another by appearing in entrance tests. While NPE, 1986 has spoken of examination reform of the above nature, the reform has not been implemented. Examination Reform should be construed as a *package* of all the above mentioned features and may be tried out on pilot basis to begin with. A fragmented and half-hearted approach would be misplaced and counter-productive.

5. Languages

The policy regarding languages to be used in imparting education, over the years, has been primarily one of laying emphasis on adoption of the mother tongue and regional language. Article 350-A also specially mandates that the State and local authorities should provide adequate facilities for instruction in the mother tongue at the primary stage to children belonging to linguistic minority groups. NPE 1986 commended the implementation of 1968 Policy in regard to languages 'energetically' and 'purposefully'.

In spite of sound policy prescriptions, in practical terms, switch-over to the mother tongue/regional languages has been rather uneven in the country. In higher education, particularly, adoption of regional languages as media of instruction has been very sluggish. Large masses of children, particularly, in the rural areas, remain denied of entry into higher education, not being in a position to succeed in compulsory public examinations in English language at school stage. This contributes to a certain degree of discrimination in education and a consequent dual system of education, one for the affluent and the other for the under-privileged.

A phased strategy is required for giving the mother tongue/regional language their pre-dominant/due position in all stages of education. This calls for examination of a number of problems at what stages learning of different languages should commence, the manner of evaluating language competencies, how the learning of classical and foreign languages should be designed and fitted into the curricula, what new modalities need to be adopted for training of the language teacher, and how to define the role of educational technology in language teaching/learning.

For purposes of development, all Indian languages should be construed as equal. Jawaharlal Nehru's assurance on the language issue is to be borne in mind too.

A fresh linguistic survey of India is needed to take stock of the latest situation, considerable changes having occurred since the earlier survey undertaken decades back.

In order to facilitate interaction between the regional languages of the country, existing teacher education facilities and language resource institutions should be used to full capacity. Special incentives may be provided to the teachers who wish to learn modern Indian languages other than their own. Findings of modern researches in language pedagogy should be brought under application.

In higher education, provisions could be made for the teaching of Indian Literature in the regional languages, with a view to promoting national integration.

6. Education for Women's Equality

Enhancing participation of girls and women in education calls for a modality of tackling women's issues universally outside the precincts of the schools as well. These issues concern all those factors which tend to prevent them from their access to educational institutions. Some of the important steps, apart from those mentioned elsewhere, required for tackling all the issues comprehensively are:

- School being made the nodal point for delivery of essential services by the various grass-root level government agencies delivering services concerning nutrition, health, child-care etc.
- Increasing availability of schools, especially middle schools, near homes.
- Providing hostel facilities, where needed.
- Proportion of women teachers to be raised significantly.
- Incentives in terms of scholarships, free supply of text-books, uniforms etc.
- Establishment of Women's Polytechnics (not so far implemented, despite stipulation in the Programme of Action (POA) formulated in pursuance of NPE, 1986).
- Development of Women's Studies Research Centres in the Universities, again explicit in the POA but implemented only in a scattered manner.
- Earmarked funding for women's education.
- Earmarking for women 50% of resources provided for primary education.

- Earmarking for SC/ST women, 50% of the resources provided for the educational development of these communities.
- Media programmes (particularly of Doordarshan) are to be freed from tendencies conducive to gender bias, sex stereotyping and sex violence.
- Unless this is done, inculcation of the appropriate values in the school system regarding gender equality will not be feasible.

7. Removal of Regional Disparities

The country being very large, marked by striking diversities in terms of language, culture and resource endowments, blanket policy options, strategies, investment patterns and targets do not help in tackling the problem of regional and sub-regional disparities. No doubt, efforts have been made in the past to deal with the problem of inter-state disparities by special planning and allocation of funds for educationally backward States/UTs. This, however, is not adequate. There are, indeed, backward areas within States that could be construed as educationally not backward in terms of certain parameters. 'Approach to the Eighth Five Year Plan' lays much store by decentralisation in planning. Therefore, there is need for identification of backward areas at the district and sub-district levels. District, block and village level profiles have to be prepared in meaningful planning for educational development.

It follows that target setting for educational development also has to be disaggregated and area specific (even gender specific), whether it be for Universal Elementary Education, Adult Education or Vocational Education. Full scope would have to be given for diversified content planning, plural learning strategies and variable ways of non-formalising the school, according to the socio-cultural milieu of different regions. Special efforts are needed to develop learning resources in regional languages to reduce inequities. It is only in this way that backward classes could be provided education of comparable standards without which reservations for job opportunities cannot be meaningfully availed of by them.

8. Decentralised School Management

Consistent with 'local area planning' mentioned elsewhere, the management of the school system should be decentralised. The entire school system should be managed by the Community and be accountable to it. The management model may be that of local college, a high school or a group of high schools and the associated middle and primary schools coming together in a cluster. The Complex may work in co-ordination with Panchayati Raj institutions as well as local development and social welfare agencies, voluntary or Government. The university serving the region may affiliate itself with this Complex. The university may help in the development of the Complex through its faculty, students and technical resources. There could be a memorandum of understanding between the Complex and the university on the one hand, and the Complex and the local body, on the other. The Complex will follow its own self-monitoring system. Parallel systems of monitoring through the university, District Board of Education, local body, resource agencies (SCERT/SIE/DIET) etc. could coexist. The Complex should be provided with adequate intellectual resources as well.

The long-term objective is that these Educational Complexes will come under the umbrella of Panchayati Raj institutions/local bodies. The details of devolution of responsibilities at different tiers of education will no doubt depend upon the legal framework that may be designed by the States for the purpose.

The basic idea is that management of education in the Complexes should be the job of professionals, i.e. the teaching community. Various aspects like curriculum, syllabi, content and process, evaluation, monitoring teacher training and modes of delivery of education to different segments of the society will be the responsibility of the teaching community itself.

In discharging this responsibility, teachers will closely interact with the community they are serving. In this arrangement, the quality of education will not be determined by a body of inspectors or functionaries external to the educational system. Consequently, education being directly in the hands of those for whom it is a matter of day-to-day concern, its quality should significantly improve.

While the running of the Educational Complexes will be the point concern of the community and the teachers who are internal to the system, their funding will necessarily come from the State Government and other local bodies that may have jurisdiction. For the purpose of ensuring that the financial resources deployed by them really result in efficient delivery of education, the State Governments and the local bodies may interact with the Educational Complexes through District Boards of Education and Block-level and Village-level Education Committees. These bodies will consist of educationists, teachers, social workers, representatives of voluntary organisations, trade unions and official development agencies as well as representatives of disadvantaged sections such as scheduled castes and tribes, other backward classes, women etc.

As already brought out elsewhere, in the whole arrangement, the Head of the educational institution, the Headmaster/Headmistress/Principal shall have meaningfully delegated authority with the teachers being centre-stage.

The community also will need to be made aware of simple parameters with reference to which they can make their own assessment of the learning outcome from the schools, in both the cognitive and the affective domain.

9. Resources

Considering the Constitutional directives the need for State intervention in education for reasons of equity and social justice, and the gigantic magnitude of the clientele to be provided education, public expenditure, indeed, has to be very significant. Over the years, no doubt, the percentage of GNP spent on education has been increasing. In 1950-51, it was 1.2%. In 1986-87, it was 3.9%. But the actual requirements are far in excess of the present level of expenditure. It is also much below the level of 6% of the GNP envisaged in NPE, 1986. As stated elsewhere, India ranks 115th in the world in terms of investment in education as a percentage of GNP. Amongst countries with a population of 10 crores and above, India is at the very bottom barring Bangladesh. Share of educational plan expenditure came down to 3.55% in the Seventh Plan from 7.86% in the First Plan.

Within Education, intra-sectorally, there have been serious distortions in outlays. The share of Elementary Education decreased to 29% in the Seventh Plan, from 56% in the First Plan. Over the same period, share of University and general education increased from 18% to 44%. These retrogressions are serious, considering that the rate of return on elementary education, is considerably higher than in tertiary education. This could be perceived as much more glaring, viewed from the angle that certain University Scholarships, reportedly, have been higher than the fees charged. The tertiary level student fees, not having meaningfully increased over the years, there is a strong case for their upward revision. (The student fees also are far lesser than per student cost).

Government share in the overall expenditure on education increased from 57.1% in 1950-51 to 77.9% in 1979-80. The share of local bodies and internal resource generation and of private agencies has significantly come down. (Data for years later than 1979-80 are not available).

Strategies for augmenting resources for education and distribution of the same would need to be: a significant increase in public expenditure—at least 6% of the GNP; substantially larger allocations in the Central as well as State budgets; mobilisation of resources from the community and through local bodies; increased ratio of allocation for Elementary Education; non-divertible allocation within Elementary Education for special sections such as women, SC/ST/OBC communities etc.; equitable formula for enhancing the fee structure for higher education, simultaneously with offer of scholarships for the weaker sections and student loan facilities; and alternative measures like graduate taxes on the users of the services of graduates. □

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
Oct. 2-4, 1990	5th Annual National Convention of Physics Teachers	**Themes include Teaching aids in Physics education, Planning of an UG & PG Physics Laboratory Interactions between educational institutions & instrument makers etc.**	**Gandhi Memorial National College, Ambala Cantt.**	**Mr. M.K. Sharma, Convener, 5th IAPT Convention, G.M.N. College, Ambala Cantt.-133001 (Haryana)**
October 7-13, 1990	National Workshop on Radiochemistry and Applications of Radioisotopes	**To popularise the study of nuclear sciences in colleges and universities and to highlight the applications of isotopes in research, industry, agriculture and health, etc.**	**Ravi Shankar University, Raipur.**	**Prof. S.G. Tandon, Director of the Workshop & Head, Department of Chemistry, Ravi Shankar University, Raipur-492010.**

Workshop on Question Banking

A three-day workshop on Question Banking in the subjects of Computer Science, Banking, Book Keeping, Accountancy and Educational Psychology was held at the University of Bombay on September 3-5, 1990. Dr. B.P. Lulla, Director, Directorate of Distance Education, University of Bombay was the coordinator of the workshop. Teachers and professional Chartered Accountants who are part-time lecturers in the Colleges of Commerce were nominated to attend the workshop.

Delivering the keynote address at the inaugural function, Dr. V. Natarajan, Director, Research Cell, AIU, outlined the basic principles of Question Banking and in particular the development of valid and reliable questions/items in these three subjects through a series of specially conducted workshops getting a large body of teachers to participate in item/question writing, prevalidating and interacting. He brought to the attention of the three groups the necessity of having a large variety of questions and items so that class tests as well as end semester examinations could be put together with the help of these questions and items.

The workshop had three lead lecture presentations from Dr. Natarajan in the areas of instructional objective, design of selection type and supply type questions and prevalidation of question items. Participants at the end of every lead lecture participated in discussions and they were put into small groups to do several assignments including choice of objectives and abilities to be tested on the various syllabus topics preparing selection type items (constant alternative, multiple choice, multiple facet, matching and re-arrangements) and supply type questions (completion question, simple question, short answer questions, long answer and problem solving questions). In order to enable them to write good quality items and questions, illustrative examples in these three subjects were circulated for their perusal and comprehension. Each one of the participants then took up a portion of the syllabus given to them and prepared questions and items within the topic content of the chosen area. They then added several technical values to every question namely the topic in which the question is set, the ability it purports to test, time for answering, marks that can be allotted for the correct answer etc. There were group discussions after individual assignments.

At the valedictory function, Dr. (Miss) M.D. Bengalee, Vice-Chancellor, University of Bombay said that she was glad that the participants were all drawn from colleges affiliated to Bombay and SNDT Universities and that they could go through the professional exercise of item question writing, prevalidation, etc.

In all 26 participants attended the Workshop at which 2,000 question items were selected after careful prevalidation.

People Awareness Camp

Women's Studies and Development Cell, S.D. College, Muzaffarnagar in collaboration with Cruch's Auxilliary for Social Action (CASA), New Delhi conducted an awareness camp in the village Naya Gaon on 23rd August, 1990. The camp was inaugurated by Dr. L.N. Mittal, Principal of S.D. College, Muzaffarnagar.

This awareness camp was completed in four phases. In the first phase a proforma related to pre-school children's health was filled by the some girls of B.Sc. (Home Science). In the second phase a team of doctors and health workers checked-up the pre-school children and gave them different vaccines, drops and syrups related to their diseases. Immunization cards were distributed to villagers. Iron tablets were also distributed to women.

In the third phase a meeting of rural folk, both men and women, was organised in the village. Dr. Mittal made them aware of their own liberation and the development of the village. Shri S.C. Kulshreshtha discussed about the different problems in the village. Shri S.C. Dua identified the adult literacy programme. (Km.) Renu Kamboj discussed with the village women about their different

Women's Studies Programmes and Women's Organisations

The Association of Indian Universities (AIU) is preparing a Directory of Women's Studies Programmes and Women's Organizations in India in collaboration with the Commonwealth of Learning (COL), Vancouver, Canada. The Association invites all such organizations working in any part of the country to get in touch with the Secretary at the following address for their inclusion in the proposed Directory:

The Secretary
Association of Indian Universities
AIU House,
16 Kotla Marg,
New Delhi 110 002.

problems and also talked about a Balwadi programme in the village. CASA members Mr. Abdul Qayum, Mr. R.N. Yadav and (Km.) Jahanara Wahid also talked about different felt needs of villagers and exhorted them to solve their own resources. In the fourth phase a few documentary films related to village life were shown to villagers by Information Department of Muzaffarnagar.

The village has been adopted by the college and different extra mural agencies working in the college like NSS, NCC, Scouting & Girl Guiding, NYK, NAEP etc. are proposed to be combined to strengthen the developmental activities in the village with the technical support from CASA, New Delhi.

Refresher Course in Commerce

A refresher course in Commerce for University and college teachers was recently concluded at the Pondicherry University. In his valedictory address Dr. N. Venkatasubramanian, Director, Centre for P.G. Studies, Govt. of Pondicherry, emphasised the importance of Teacher-Students rapport. Dr. N. Rajamony, Director, ASC, Pondicherry University, who presided, distributed certificates of successful completion of the course and Books worth Rs. 200/- in commerce to all the participants. Dr. N. Rajamony expressed his desire that the participants may carry home the benefits derived by them from the course and as well from their interaction with about 30 experts in different areas of commerce and management and disseminate the derived benefits among their students. He also requested them to work unitedly towards improving the quality of commerce education in the country and make them socially relevant.

The topics discussed included Social Responsibilities of Business, De-Centralisation of Economic Power, Conflict Management, Time Management, Factors of Production, Industrial Policies, etc.

Study Centre for the Disabled

Indira Gandhi National Open University, in collaboration with the Blind Relief Association and the National Society for Equal Opportunities for the Handicapped (NASEOH), has established a Study Centre to make available the resources of the university to students with varying disabilities. The Centre's head, Mr. Lal Advani, who is totally blind, is intimately familiar with the problems of disabled students in India as well as ways of coping with these problems. The Study Centre offers courses to all students and supports the policy of integrating disabled and non-disabled students. The Material Production Wing of the Centre has the facilities to prepare Braille material, audio and video cassettes and offer interpretation in sign languages for the deaf. The Centre is not merely expected to serve a limited number of disabled students in Delhi. It will also function as a resource centre, for any other centre of the university in the country, offering services to disabled students. The establishment of this Centre marks the beginning of a new era by offering Distance Education services to disabled students who make up one of the most disadvantaged sectors of the community.

Further details can be had from Mr. Lal Advani, Head, Study Centre, Indira Gandhi National Open University, Hauz Khas, New Delhi-16.

ICMR Awards

Twenty scientists have been given the Indian Council of Medical Research (ICMR) awards for outstanding contribution to biomedical research.

विद्यार्थियों/अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातकोत्तर स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपलब्ध सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के लिये प्रश्न-बैंकों की इस श्रृखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय ही लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रु० 100.00
रसायन विज्ञान (Chemistry)	मूल्य रु० 160.00
इतिहास (History)	मूल्य रु० 70.00

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
ए.आई.यू. हाऊस, १६ कोटला मार्ग
नई दिल्ली-११०००२

Presenting the awards in New Delhi recently the minister of state for health and family welfare, Mr. Rasheed Masood, said that while the pursuit of new knowledge will have its impact in the long run, in the medical field there appears to be sufficient accumulation of knowledge and experience which, if applied expeditiously and judiciously, can yield dividends in a short time.

He stressed that this available knowledge must be applied for the improvement of health of the masses and technology must be adapted to suit the socio-cultural and economic conditions of our people. There is need to improve the outreach of our health services so that the underprivileged sections can benefit by them, he added.

The recipients of the awards are: Dr. S.S. Guraya (Punjab Agricultural University, Ludhiana), Dr. M. Krishnan Nair (Medical College Campus, Thiruvananthapuram), Dr. Usha Gupta (AIIMS), Dr. Indu Gupta (PGIMER, Chandigarh), Dr. J.S. Mathur (LLRM Medical College, Meerut), Dr. H.P.S. Sachdev (Maulana Azad Medical College), Dr. K.A.V.R. Krishnamachari (Regional Medical Research Centre, Jodhpur), Dr. U. Sengupta, (Central JALMA Institute for Leprosy, Agra), Dr. S.P. Thygarajan (Dr. A.L. Mudaliar, PG Institute of Basic Sciences, Madras), Dr. Urmila Pingle (National Institute of Nutrition, Hyderabad), Dr. Sumitra Dash (PGIMER), Dr. T.N. Raghava Varman Thampan (Central University, Hyderabad), Dr. V.P. Sharma (Malaria Research Centre, Delhi), Dr. P.N. Kulhara (PGIMER), Dr. Dinesh K. Bhargava (AIIMS), Dr. Santosh K. Bhargava, Dr. B. Ravindran (Regional Medical Research Centre, Bhubaneshwar), Dr. G.P. Pal (Govt. Medical College, Surat), Dr. Kiran Katoch (Central JALMA Institute for Leprosy, Agra) and Dr. S.K. Jindal (PGIMER).

New Varsities for Assam

The Government of India has decided to set up two central universities in Assam—one in Tezpur and another in Barak Valley.

This was disclosed when implementation of the Assam Accord was reviewed at a meeting the Prime Minister had with the Chief Minister, Mr. P.K. Mahanta, and his Cabinet colleagues.

It was also revealed that a Central team will soon visit Assam to finalize a site at Misa in Nowgong district for an Indian Institute of Technology.

News from Abroad

UNESCO's International Literacy Prizes for 1990

Organisations in China, the Dominican Republic, France, Cape Verde and India have won UNESCO's International Literacy prizes for 1990. A striking feature of the programme, conducted by all five winners, is the strong link between literacy, vocational training and income-generating activities.

The Nadezdha Krupskaya prize was awarded to the People's government of Xiping county in Henan province, China, for sustained efforts over many years to reduce illiteracy among the 7,50,000 inhabitants of the country where the living and educational standards of the rural population was very low.

The Dominican Republic's Universidad Central Del Este (UCE) received the International Reading Association Literacy Award for its outstanding performance in the formulation of programme objectives, in coverage and mobilisation of university students for its adult literacy programme, and in evaluation activities. The programme was launched in 1984 as a permanent activity irrespective of political change.

The Noma Prize, goes to the Institute of the Brothers of the Christian Schools, whose members devote their lives and work to the education and cultural development of children, young people, disadvantaged adults of all social conditions, irrespective of their moral or religious convictions.

The Iraq Literacy Prize was awarded to the Directorate General on Non-Formal Education of Cape Verde. The Directorate has succeeded in bringing down the illiteracy rate of 33.5 per cent from more than 60 per cent in 1974.

The King Sejong Prize, awarded for the first time this year, was won by the Kerala Sastra Sahitya Parishad (KSSP), Trivandrum, a voluntary non-governmental organisation, which began in 1962 as a science popularisation movement. Its efforts are currently focussed on eradicating illiteracy from Kerala as a follow-up to its successful efforts in the district of Ernakulam.

Book Review

Management of University Hostels

P.C. Bansal*

Soundara Rajan, M.V. Management of University Hostels. Hyderabad, Institute of Education and Culture, 1990. pp xv + 194. Price Rs. 200.00.

The book under review forms the substance of a doctoral dissertation in Public Administration. The study looks into the overall hostel management of three universities in Andhra Pradesh, namely Osmania, Andhra and Sri Venkateshwara, and its conductance for the pursuit of academic excellence. Specifically, it examines the financial management with focus on scholarship policy of the state government, and personnel management and their adequacy and relevance to the needs of present day hostel management.

Soundara Rajan maintains that India is the birth place of hostel system. It was developed during the Vedic period, continued during the Puranic period and Buddhist period with certain changes. Its importance was also recognised during the medieval period. The hostels were maintained by the community and the state. He alleges that the introduction of Macaulay's system of English Education in 1830 witnessed the declining importance of hostel system in educational institutions. Macaulay introduced the concept of linking job with education which resulted in commercialisation of education. As a result, commercial lodging houses sprang up. Wood Despatch of 1854 did not make any mention about the need to provide hostel facilities to the students. In 1869, Sir Sayyid Ahmed Khan, the founder of Mao College at Aligarh, introduced a system, whereby students were to stay in organised residential institutions away from home. It was only after the enactment of the Universities Act of 1904, the Government took the initiative towards construction of hostels. Calcutta University Enquiry Commission (1919) was an important landmark towards hostel management. Its report became a model for the universities towards the management of their hostels. Some of its recommendations are relevant even today.

Soundara Rajan feels that the management of hostels has not received the attention of researchers, but the problem has been dealt with by various commissions and committees. On the basis of the surveys of the living conditions of university students in 1958 and 1961 it was suggested that two years stay at the hostel or hall of residence should be made compulsory for university students. UGC survey on the living conditions of the students in university and college hostels conducted in 1979 focussed on the provision of hostels and utilisation of facilities therein. A high level seminar on management of university hostels in Andhra Pradesh held in 1981 requested the state government and universities to implement the norms laid down by UGC, but no decision was taken about their implementation. It is alleged that documents like National Policy on Education 1986 (NPE) and Programme of Action on NPE have not paid sufficient attention to the management of hostels. In 1977-78, the introduction of liberal scholarship policy to the students in the universities of Andhra Pradesh was the beginning of acute problems in hostel management. It made stay in hostel compulsory for scholarship holders. This triggered off financial and management problems in the universities in the state. At present, hostel facilities are available to 14 per cent of the students enrolled in higher education.

The study relied on both primary and secondary sources for data collection. The perception of students and views of wardens and officials in the universities and government were obtained through two questionnaires, one for students and another for wardens. The sample comprised 198 students and 23 wardens from the three universities. The technique of non-participation observation was also used by visiting hostels.

The results indicate that there is overcrowding in the university hostels. Students are accommodated without taking into consideration the basic amenities. The allotment of rooms is not made by the wardens because the students are admitted under the principle of admission without accommodation. The norms of accommodation prescribed by UGC are not followed, and the students are living below the minimum plinth area prescribed. Moreover, minimum physical facilities like furniture at hostels and dining halls are not provided. As a result, there is no conducive atmosphere for study and hostlers are in a disadvantageous position compared to day scholars.

The wardens play a crucial role

**Former Scientist (Psychology), Ministry of Defence, B-58, Inder Puri, New Delhi-110012.*

in the management of hostels. They have to manage the arrangement of finances and run the messes. The author writes that these functions have not been reviewed and codified by taking into account the changes that have taken place after independence. A large majority of wardens and students opine that the system of wardenship should continue and only teachers can perform this job well. The Committee on Residential Accommodation for Students suggested that senior teachers capable of commanding respect should be appointed as wardens. But many senior teachers are reluctant to assume the duties of wardenship. The alternative is joint committee system in which warden and students will participate in the management and decision making.

One of the major problems affecting the management of hostels is the paucity of funds. The financial procedures and problems add to the complexity of the situation like escalating mess bills, the delayed receipt of scholarships, and the need of university to advance money for the mess to function. Moreover, the scholarship policy of the state government has much to do with it. The scholarship policy was adhoc in character and went on changing without a scientific or rational basis. It has adversely affected the corporate life and has created complexes in interpersonal relations. Besides, income by way of fees from the residence as shown in the budget is not in proportion to the total strength in the hostel. There are cases of large scale diversion of funds from intended purposes, resulting in violation of rules. The per capita subsidy to the residents of the campus hostels has been increasing over the years. This is resulting in reduction of capital expenditure and renders physical facilities insufficient.

An important aspect of hostel management has been the problem of maintaining cordial relations between the administrative and non-administrative staff on one side and students on the others. It is reported that no uniform norms are followed for calculating the required staff for hostel and messes. There are variations in staff strength, and student-staff ratio is very high. The permanent employees show slackness, the temporary employees work better. There are also free workers and they are the cause of indiscipline in the hostel. The only way out is to increase the staff strength. The study points out that sufficient care is not being taken at the time of recruitment of functionaries to man various positions in the hostels.

Suggestions have been made to streamline the system so as favourable conditions conducive to living and learning are created for students staying in the hostels. The three universities did not incorporate the norms suggested by UGC in the management of hostels. The failure to introduce comprehensive structural changes matching the magnitude of the problem largely accounts for the crisis in hosting management. It is time that comprehensive structural changes are initiated, learning lessons from the adhoc attempts made in some of the universities. There is a need to modify and codify the rules and regulations into manuals to bring about uniformities in their enforcement and help achieve coordination between various functionaries. Suitable accommodation and minimum physical facilities is another dimension of hostel management. It is time that greater integration is achieved between expansion in higher education and the provision of hostel facilities. There is a need to re-examine the scholarship policy. Post-matric scholarships may be bifurcated for post-graduate and professional courses and scholarships may be delinked with stay in hostel. In financial management, there may be uniformity in maintenance of accounts, introduction of concurrent audit, prompt release of grant and timely preparation of mess bills. Personnel policies are mainly adhoc in nature and there is non-existence of rational recruitment policy. A large number of casual workers, who are paid out of establishment charges have been engaged. Regarding the wardens it is observed that if the system of wardenship is to continue, teachers who have missionary zeal to serve the student community should be appointed as wardens. There is need for training, and a manual specifying the duties and responsibilities of the wardens has to be prepared. Further, wardenship should be treated as an academic activity.

It is hoped that this study will induce many researchers to undertake studies about hostel management in various universities. It is backed by author's experience as Warden. The book will be of interest to administrators, academicians and general readers associated with hostels in one way or the other. Soundara Rajan has done a good job and deserves the gratitude of the reader.

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A list of doctoral theses accepted by Indian Universities

HUMANITIES

Philosophy

1. Jain, Saroj Bala. *Philosophical basis of contemporary social thought with special reference to Gandhi and Nehru.* Delhi.

2. Lobzang Tsewang. *Madhyamika's conception of truth and error with special reference to Acarya Tsang Kha Pa.* BHU. Prof. L.N. Sharma, Department of Philosophy, Banaras Hindu University, Varanasi.

3. Saha Ray, Subhash Chandra. *Perceptual cognition: A philosophical study.* NBU.

4. Tiwari, Hridaya Nand. *Taittireeyopnisad ka darshnik adhyayan: Shankar Bhasya ke vishesh sandarbha mein.* BHU. Dr. K.C. Dave.

Religion

1. Harvinder Singh. *Karma and re-birth in Indian religious thought with special reference to Sikhism.* Punjabi.

2. Rajinder Kaur. *A comparative study of manotheism in semitic and Sikh traditions.* Punjabi. Dr. Wazir Singh, Department of Religious Studies, Punjabi University, Patiala.

Fine Arts

Sculpture

1. Singh, Rajendra Prasad. *Bharat mein Girja vastukala ka udbhav evam vikas.* BHU. Dr. R. Dasgupta.

Painting

1. Sovan Som. *Tin shilpi: Nandalal Bose, Rabindranath Tagore, Ramkinkar.* RBU.

Music

1. Gundi, Meera Srivashankar. *Uttar Karnatakadalli Beladubanda Hindustani sangeet gharanegalu: Ondu adhyayana.* Karnatak. Dr. A.U. Patil, Chairman, Department of Music and Fine Arts, Karnatak University, Dharwad.

Performing Arts

1. Gurcharan Singh. *Adapting novel for a musical theatre.* Punjabi. Dr. Surjit Singh Sethi, Department of Theatre and Television, Punjabi University, Patiala.

Language & Literature

English

1. Bhasin, Mridula. *Joel Chandler Harris: An assessment of his works.* Rajasthan. Dr. (Mrs.) Santosh Gupta, Assoc. Prof., Department of English, University of Rajasthan, Jaipur.

2. Durvedi, Shri Dhar. *Major themes in the poetry of Cecil Day Lewis, the Thirties Phase.* BHU. Dr. A.K. Shukla.

3. Gheetha, N. *The city in the novels of Thomas Wolfe.* Madurai.

4. Jeyarajh, M.A. *Indo-Anglian historical fiction: A critical assessment.* Madurai.

5. Krishanan, Meenakshi. *Some aspects of Victorian Humour with reference to Dickens, Carroll and Lear.* BHU. Dr. A. Sircar, Lecturer, Department of English, Banaras Hindu University, Varanasi.

6. Kulkarni, B.R. *The essay in Indian writing in English: A critical survey.* Gulbarga. Dr. G.S. Balarama Gupta, Prof. and Chairman, Department of English, Gulbarga University, Gulbarga.

7. Mahajan, Shakti. *Images of pleasure and rain in the sensory art of Keats.* HP.

8. Narsimha Rao, P.V.L. *Variations in style in Indian English Journals.* Ranchi. Dr. P.P. Dayal, Prof. and Head, Department of English, Ranchi University, Ranchi.

9. Pa[illegible]ittam Raja. *Historical consciousness in the Anglo-Indian novels with special reference to Paul Scott's Raj Quartet.* IIT Madras.

10. Parveen Kumar. *Individual and society in the fiction of James Jones.* Rajasthan. Shri M.M. Rai Jani, Assoc. Prof., Department of English, University of Rajasthan, Jaipur.

11. Ramana, Paramjit Singh. *Narrative patterns in the fiction of R.K. Narayan.* Punjabi. Dr. B.R. Rao, Department of English, Punjabi University, Patiala.

12. Sangha, Davinder. *Pen warmed up in hell: Mark Twain as a social critic.* Panjab.

13. Saxena, Mohana. *The Dark Night of the Soul: Estrangement in the novels of Robert Penn Warren.* IIT Madras.

14. Sidhu, Nazar Singh. *Between the non-violence of Malgudi and the Violence of Jungle: The semiotics of human struggle in R.K. Narayan's novel.* Punjabi. Dr. H.S. Gill, Department of Linguistics, University of Delhi, Delhi.

Sanskrit

1. Baldha, C.V. *Contribution of Vidyaranya Swami to Advait Vedant.* Saurashtra. Dr. M.I. Prajapati.

2. Chakrabarty, Satyananda. *Origin and development of vows connected with Durgapuja.* Calcutta.

3. Chakrabarty, Sukla. *A linguistic study of the pratisakhyas for a comparative and historical evaluation of old Indo-Aryan phonetics.* Calcutta.

4. Mishra, Shreekishore. *The laws of sacraments in the Dharmasastras: A study.* Calcutta.

5. Sanyal, Shyamali. *The concepts of svalaksana and samanyalaksana: A critical evaluation.* NBU.

6. Saraf, Archana. *Harivansh Puran ke Vishnu Parv ka sahityik adhyayan.* HS Gour. Dr. R.B. Tripathi, Department of Sanskrit, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

7. Satish Chander. *Vigyanvad aur advaitvad kee drishti se Gaurpadkari ka alochanatmak vishleshan.* Panjab.

8. Singh, Munni. *Rigvedik aaranyako ka sahityik evam ayurvedik adhyayan.* BHU. Dr. K.R. Sharma and Dr. K.P. Singh, Reader, Department of Sanskrit, Banaras Hindu University, Varanasi.

9. Singh, Savuta Jynar. *Vaidik sanhitaon mein daiva vyapashrya chikitsa shastra ka samalochanatmak adhyayan.* BHU. Dr. I.P. Singh.

10. Swapna Devi. *The concept and treatment of dream in Sanskrit literature.* Gauhati. Dr. Ashok Kumar Goswami, Reader, Department of Sanskrit, Gauhati University, Guwahati.

11. Tiwari, Rameshwar. *Sanskrit ke pramukh rupakon mein drishya suchya vastu vibhag.* BHU. Dr. S.D.S. Chaturvedi, Reader, Department of Sahitya, Banaras Hindu University, Varanasi.

12. Tripathi, Akhileshwar. *Pramukha Sanskrit mahakavyon mein karuna ras.* BHU. Dr. R.P. Dubey.

13. Yadav, Hawaldar Singh. *Pramukh smritiyon ke sandarbha mein Bramcharyashram kee avadharana: Ek adhyayan.* BHU. Dr. (Miss) M.K. Tripathi and P.D. Singh, Lecturer, Department of Sanskrit, Banaras Hindu University, Varanasi.

Punjabi

1. Sethi, Gurdeep Singh. *Nanak bani da kavik pakh.* Delhi.

2. Singh, Rajinder Pal. *Punjabi geetan, 1947-88 vich sanchar jugat.* Punjabi. Dr. Bhupinder Singh Khaira, Department of Punjabi, Punjabi University, Patiala.

Hindi

1. Dholia, Zohra. *Rajasthan aur Kutchhi lokgeet: Tulnatmak adhyayan.* SNDT. Dr. Urvashi Surti.

2. Dubey, Siddh Nath. *Sant sahitya evam Sahjobai.* BHU. Dr. M.N. Roy.

3. Gupta, Anita Rani. *Hindi patrakarita aur Bhartendu.* BHU. Shri H.A. Azmi, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

4. Indumati Devi. *Rashtriya navajagaran aur Jaishankar Prasad ke natak.* BHU. Dr. C.R. Yadav, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

5. Janki Dass. *Hindi ke natya kavya: Kath evam shilp.* Punjabi. Dr. H.C. Rajpal, Department of Hindi, Punjabi University, Patiala.

6. Jeyaprakash, S. *A comparative study of Sivavakkyar and Kalidas.* Madurai.

7. Joshi, Indu. *Chhayavadottar Hindi kavya mein parampara aur prayog.* Calcutta.

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11. Singh, Abhay Kumar. *Manohar Shyam Joshi ka katha sansar.* BHU. Dr. Awadesh Pradhan.

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13. Sneh Prabha. *Swadhinata andolan aur upanyaskar Premchand*. BHU. Dr. C.R. Yadav, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

14. Srivastava, Nirmala Devi. *Swachchhandatavadi chetana aur Nirala ka katha sahitya*. BHU. Prof. Tribhuwan Singh, Department of Hindi, Banaras Hindu University, Varanasi.

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Urdu

1. Brij Bhushan. *Mahinder Nath Bahaisiyat novel nigar*. Panjab.

2. Mohammad Mansoor Alam. *Akhtar Ansari Dehlavi: Life and literary works*. Ranchi.

Bengali

1. Bagchi, Atasi. *Rabindro-upanyase laukik sanskriti*. BHU. Dr. S. Sinha, Prof. Department of Bengali, Banaras Hindu University, Varanasi.

2. Bhattacharya, Debabrata. *Duropiya-o-Bharatiya dakinitantra*. RBU.

3. Chakraborti, Tripti. *Madhusudaner sahitye nari*. RBU.

4. Das, Amita. *Bibhutibhusan Mukhopadhyayar-Chotogalpa*. RBU.

Marathi

1. Thakur, Ravindranath Narayan. *R.W. Dighe yanchya kadambri vangmaycha chikitsak abhyas*. Poona. Dr. Anand Yadav, Department of Marathi, University of Poona, Pune.

Gujarati

1. Rohadia, A.K. Hardas Misan: A study. Saurashtra. Dr. B.S. Jani, Reader, Department of Gujarati, Saurashtra University, Rajkot.

Arabic

1. Rahman, Syed Ahsanur. *Hazrat Ali Ibne Abitalib: His religious and political activities as they are reflected in his sermons*. BHU. Dr. D.R. Rizvi, Reader, Department of Arabic, Banaras Hindu University, Varanasi.

Tamil

1. Alagarnathan, S. *Tamil literary theories: Sangam age*. Madurai.

2. Arumugaperumal, A. *Worship of village deities and festivals in Agasteesweram Panchayat Union*. Madurai.

3. Ayyanar, V. *Folk tales in Madurai District*. Madurai.

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Malayalam

1. Leela Kumari, M. *Concept of woman in Malayalam novel*. Kerala. Dr. K. Ramachandran Nair, Prof. and Head, Department of Malayalam, University of Kerala, Kariavattom.

Telugu

1. Radhakrishna Sastry, Sripada. *Rayalavari visisthadvytadi vishaya: Aamukthamalyada*. Andhra.

2. Srinivasappa, K. *Sree Parvata Purana pariseelana*. Venkateswara. Prof. K. Sarvottama Rao, Department of Telugu, Sri Venkateswara University College, Tirupati.

3. Suryanarayana, Chappa. *Sree Abburi sahithee jeevitha pariseelanam*. Andhra.

4. Tulasisesha Bharathi, Karna. *Prose folklore in Telugu Hindi: Comparative study*. Andhra.

Geography

1. Anurag Chander. *Landslide: An expression of man-nature interaction in the Western Himalayas*. Panjab.

2. Bohare, Ramakant. *Level of poverty and unemployment in the rural areas of Sagar District*. HS Gour. Prof. R.S. Dube, Head, Department of Geography, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

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6. Singh, Veena Devi. *Ravines of Garara Basin: A geomorphological study*. BHU. Dr. T.D. Singh, Lecturer, Department of Geography, Banaras Hindu University, Varanasi.

History

1. Agrawal, S.C. *Trade and industry in early medieval Jain literature with special reference to Rajasthan, 700 A.D. to 1100 A.D.* Rajasthan. Prof. Ram Gopal Sharma, C-11, Bal Marg, Tilak Nagar, Jaipur.

2. Barman, Santa. *A study of the zamindary systems in Goalpara during British Regime.* Gauhati. Dr. D.P. Barooah, Prof., Department of Political Science, Gauhati University, Guwahati.

3. John, B. Maria. *Linguistic reorganisation of Madras Presidency.* Madurai.

4. Mallikarjuna. *The Congress and the scheduled castes: A case study of Tamil Districts of the Madras Presidency, 1920-1939.* Bangalore. Dr. K. Veerathappa, Prof., No. 869-B, 17 'G' 5th Block, Rajajinagar, Bangalore.

5. Sahay, Bandana. *Quit India Movement and Bihar, 1942.* Magadh.

6. Shri Narayan. *Jain abhilekhon ka Sanskritik adhyayan: Prarambh se lagbhag 1200 isvi tak.* BHU. Dr. P.C. Pant, Reader, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

7. Singh, Ashok Kumar. *Dwipantar ke prachin Kavigranth Shiv Shashan ka adhyayan.* BHU. Dr. (Miss) S.D. Singhal, Reader, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

8. Singha, Phuritsabam Birmani. *Socio-economic conditions of Assam in the first millennium A.D.* Panjab.

9. Tignath, Arvind. *Mahakavi Kalidas yugeen Bhartiya samajik jeevan.* HS Gour. Prof. D.N. Sharma, Head, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

10. Vijayalakshmi, K.S. *Irrigation policy in Princely Mysore, 1881-1947.* Bangalore. Dr. K. Veerathappa, 869, 'B' 17 'G' 5th Block, Rajajinagar, Bangalore.

CENTRAL INSTITUTE OF ENGLISH AND FOREIGN LANGUAGES

HYDERABAD-500 007.

ADVERTISEMENT NO. XXV/90

CIEFL announces the following courses beginning **1st December, 1990.**

A. ENGLISH

POST-GRADUATE DIPLOMA COURSE IN THE TEACHING OF ENGLISH

(2nd Semester: December 1990 to March 1991)

Entrance Qualification: M.A. in English, at least second class (relaxable in the case of sponsored teachers of English with at least 5 years teaching experience and an M.A. in English or an allied subject–Linguistics, Education, Mass Communication or Psychology)

AND

a Post-Graduate Certificate in the Teaching of English from this Institute with at least a Grade 'B' average

OR

an equivalent qualification.

(The Institute may organise the PGDTE Course at its Regional Centre in Shillong as well.)

2. **M.Litt.**

2 Semesters (Residential requirement):
(12 months–December to November)

Entrance Qualification: M.A. in English, at least second class, or an equivalent qualification (relaxable in the case of sponsored teachers of English with at least 5 years' teaching experience, if they have either an M.A. in English or at least a high second class (Grade B) M.A. in an allied subject–Linguistics, Education, Mass Communication, or Psychology)

AND

PGCTE through correspondence or Semester 1 of the PGDTE/PGDES with a minimum GPA of 3.00 and without a Grade 'E'.

OR

PGDTE through correspondence or Semester II of the PGDTE/PGDES with a minimum GPA of 3.00 and without a Grade 'E'.

OR

An equivalent qualification approved by the Institute.

3. Ph.D.
(6 Semesters–3 years)–Areas of Research
a. English Linguistics and Phonetics
b. English Language Teaching
c. English Literature

Entrance Qualification: M.A. in English, at least a high second class/Grade B+

OR

M.A. in English with a PG Diploma, at least Class IIA/Grade B average,

OR

an equivalent qualification.

B. FOREIGN LANGUAGES

1. Post-Graduate Certificate in the Teaching of French
(One semester: December 1990 to March 1991)

Entrance Qualification: M.A. in French with at least a 2nd Class or Grade 'C' average (relaxable in the case of sponsored teachers with a Master's degree in any subject and at least 5 year's teaching experience in the language concerned at a recognised institution).

2. Post-Graduate Diploma in the Teaching of French
(2 Semesters: December 1990 to September 1991)

Entrance Qualification: M.A. in French with at least 2nd class or grade 'C' average (relaxable in the case of sponsored teachers with a Master's degree in any subject and at least 5 year's teaching experience in French at a recognised institution).

3. M.Litt. in Modern Arabic/French/German/Russian
(2 Semesters: December 1990 to November 1991)

Entrance Qualification: M.A. in the language concerned (for Arabic MOL) with a high second class or Grade 'B' average or 55%

OR

M.A. in the language concerned (for Arabic MOL) with Grade 'C' average and a PGCT/DT with at least an overall Grade 'C'

OR

M.A. in the language concerned (for Arabic MOL) and a minimum of 5 years of teaching experience in the language concerned at any recognised institution.

4. Ph.D. in Modern Arabic/French/German/Russian
Three years–Six Semesters
(Admission to I/III Semesters)

Entrance Qualification: M.A. in the language concerned (for Arabic MOL) with a First Class or Grade 'A' average

OR

M.A. in the language concerned (for Arabic MOL) with at least a second class or Grade 'B' average and PGCT/PGDT/with at least an overall Grade 'C'

OR

M.Litt./M.Phil. or an equivalent qualification in the language concerned.

OR

M.A. in the language concerned (for Arabic MOL) and a minimum of 7 years of teaching experience in the language concerned at any recognised institution.

General Information:
Stipends/Scholarships/Fellowships available:
Stipends (Rs. 720/- per month) are offered to teachers sponsored by Government/Government recognized educational institutions for the Diploma Courses.

(a) UGC Teacher Fellowships Rs. 750/- per month (b) UGC Junior Research Fellowships Rs. 1,800/- per month (on the basis of a national level test conducted by UGC)	For M.Litt. and Ph.D. courses
(c) Merit Scholarships Rs. 720/- per month	For Diploma courses only

Reservation for Scheduled Caste and Scheduled Tribe candidates according to the Government of India Rules.

For application form for admission, fellowships and prospectus, please write to the Editor, CIEFL, Hyderabad-500 007, with a crossed postal order for Rs. 15/- drawn in favour of the Registrar, CIEFL, Hyderabad-500 007.

Last date for receipt of filled-in applications for all courses is **October 10, 1990.**

G. Venkateshwer Rao
DY. REGISTRAR

IGNOU

INDIRA GANDHI NATIONAL OPEN UNIVERSITY
INVITES

Applications from Indian Citizens possessing requisite qualifications for filling up the following posts in the Indira Gandhi National Open University in the pay scale shown against each plus allowances as admissible under university rules.

1. LIBRARIAN–1 post

Scale of Pay: Rs. 4500-150-5700-200-7300

Qualification & Experience: Essential: (i) Master's Degree in Library Science/Information Science/Documentation with at least fifty-five percent marks or its equivalent grade and a consistently good academic record;

(ii) One year specialisation in an area of Information technology/Archives and Manuscript keeping/Master's Degree in an area of thrust in the institution; and

(iii) At least ten years as a Deputy Librarian in a University Library or fifteen years experience as a College Librarian.

(iv) Evidence of innovative library service and organisation or published work.

Desirable: M.Phil./Ph.D. Degree in Library Science/Information Science/Documentation/Archives and manuscript keeping.

2. DEPUTY REGISTRARS/DEPUTY DIRECTORS
–4 posts (2 reserved for SC, 1 reserved for ST, 1 General)

Scale of Pay: Rs. 3700-125-4950-150-5700

Qualification & Experience: A postgraduate degree with at least 55% marks or its equivalent grade. 8 years experience as a Lecturer in College or a university with experience in educational administration; **or**

Comparable experience in research establishments and other institution of higher education; **or**
8 years administrative experience as Assistant Registrar or in a post carrying a scale of pay of Rs. 2200-4000.

3. DEPUTY DIRECTOR (RESOURCE PLANNING)
1 post

Scale of Pay: Rs. 3700-125-4950-150-5700

Qualification & Experience: Essential: (i) First or second class Master's degree of a recognised University preferably in Mass Communication/Communication/Educational Technology/Distance Education/Business Administration.

(ii) At least ten years experience in planning and production of TV/Radio programmes of which at least five years should be in responsible position in a broadcasting organisation.

Desirable: (i) Experience in resource planning for media production.

(ii) Experience in production of educational television/video programmes.

(iii) Training in production management.

4. ASSISTANT LIBRARIAN–1 post

Scale of Pay: Rs. 2200-75-2800-100-4000

Qualification & Experience: (i) Qualifying the national level test conducted for the purpose by the UGC or any other agency approved by the UGC.

(ii) Master's Degree in Library Science/Information Science/Documentation or an equivalent professional degree with at least fifty-five percent marks or its equivalent grade plus a consistently good academic record; **or**

Master's degree in Arts/Science/Commerce or equivalent degree with at least fifty-five percent marks or its equivalent grade with Bachelor's degree in Library Science/Information Science/Documentation or an equivalent professional degree with at least fifty-five percent marks or its equivalent grade plus a consistently good academic record.

5. PROFESSIONAL ASSISTANT–1 post (Reserved for SC)

Scale of Pay: Rs. 1640-60-2600-EB-75-2900

Qualification & Experience: M.A./M.Sc./M.Com. with a Degree in Library Science; or

B.A./B.Sc./B.Com. with a Degree in Library Science plus four years experience in a University Library.

Age Limit: Not to exceed 30 years on 1st August, 1990.

6. SEMI-PROFESSIONAL ASSISTANT–13 posts

(2 reserved for SC, 2 reserved for ST, 9 General)

Scale of Pay: Rs. 1350-30-1440-40-1800-EB-50-2200

Qualification & Experience: Graduate with two years library experience; **or**

Matric/Higher Secondary plus five years University Library experience; **or**

Matric/Higher Secondary plus Certificate in Library Science plus four years University Library experience.

Age Limit: Not to exceed 30 years on 1st August, 1990.

GENERAL CONDITIONS

(i) The University reserves the right to: (a) relax any of the requirements with reference to age and experience in exceptional cases and/or in the case of persons already holding comparable positions on a regular basis in a University/Research Institution; (b) consider names of suitable candidates who may not have applied, on the recommendations of the Selection Committee; (c) not to fill up any of the vacancies advertised; (ii) The University may conduct a written test/skill test for a post, at any place(s) at its discretion. Candidates found eligible/qualifying in the tests will be called for interview before the Selection Committee at Delhi. (iii) Since applications received may be shortlisted, merely possessing the prescribed qualifications and the requisite experience would not entitle a person to be called for a written/skill test and/or interview. (iv) No interim queries or correspondence regarding issue of call letters for test/interview or selection of candidates for a post will be entertained at any stage. (v) Reservation and relaxation in age for SC/ST candidates is as per Govt. rules. (vi) Only candidates for posts No. 1,2,3 & 4 and SC/ST candidates called for interview from outside Delhi will be paid single second class railway/bus fare to and fro Delhi by the shortest route from their place of residence on production of rail/bus tickets or photo-copy thereof. (vii) The selected candidates may be posted in and are liable to be transferred to any of the University's offices in the country. (viii) Canvassing in any form will be viewed seriously and candidature of such a person(s) will be summarily rejected.

HOW TO APPLY

Application forms can be had from the Recruitment Cell, Block 4, Room No. 18, **Indira Gandhi National Open University, Maidan Garhi, IGNOU P.O., New Delhi-110 068** in person or in written request by post which must be received in the University office before **25.9.90.** All such requests should be accompanied by a self-addressed envelope (size 13 cms x 28 cms) bearing postage stamps worth Rs. 2/-. **Requests for application forms which are not accompanied by the self-addressed stamped envelope or accompanied by inadequately stamped envelope will not be entertained.** Candidates applying for more than one post must send their application in separate covers. Completed application form alongwith attested copies of certificates in support of qualification, experience, age and caste (in the case of SC/ST candidates) etc. should reach the Registrar at the above address on or before **10.10.90.** Applications received after the due date or incomplete in any respect and/or in the case of those in Government/Semi-Government/University **not received through proper channel will not be considered at all.** However, they may send advance copy of their application before the due date followed by application through proper channel later.

REGISTRAR

Advt. No. 2/Rectt/90-91

CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF BOMBAY

DEPARTMENT OF CHEMICAL TECHNOLOGY

Applications are invited in the prescribed form for the following posts in the University Department of Chemical Technology:

Designation of the post	No. of posts	Post reserved for (SC/ST/DT&NT)	Open Category
1. Professor of Fibre Science	1	1	—
2. Professor of Paint Technology	*1	—	1
3. Professor of Pharmaceutical Chemistry	1	1	—
4. Professor of Physical Chemistry	1	—	1
5. Professor of Polymer Technology	1	—	1
6. Reader in Biochemical Engineering	1	—	1
7. Reader in Mathematics	1	—	1
8. Reader in Mechanical Engineering	1	1	—
9. Reader in Pharmacy	1	—	1
10. Reader in Paint Technology	1	1	—
11. Reader in Pharmacology and Physiology	1	—	1
12. Reader in Physico-inorganic Chemistry	1	1	—
13. Sir Homi Mehta Reader in Technology and High Polymers	1	1	—
14. Lecturer in Chemical Engineering	1	1	—
15. Lecturer in Colour Physics	1	—	1
16. Lecturer in Food Technology	1	1	—
17. Lecturer in General Engineering	1	1	—
18. Lecturer in Mathematics	1	—	1
19. Lecturer in Pharmaceutics	1	—	1
20. Lecturer in Polymer Technology	1	1	—
21. Lecturer in Textile Chemistry	1	—	1

The Pay-scales of the posts are as follows:
Professor : 4500-150-5700-200-7300
Reader : 3700-125-4950-150-5700
Lecturer : 2200-75-2800-100-4000

In addition to pay, Dearness Allowance, House Rent Allowance and Compensatory Local Allowance will be paid according to University Rules.

A higher starting pay may be given to persons appointed to the posts of Professor and Reader in special cases. All posts carry the retirement benefits according to the existing rules of the University. **Teachers of the University are permitted to take up outside work according to the University rules.** The appointments to the posts, except otherwise stated, will be made on probation for two years but the probationary period may be reduced by the Executive Council in special cases. Candidates belonging to the Scheduled Castes, Scheduled Tribe, Denotified Tribes and Nomadic Tribes so notified for the state of Maharashtra will alone be considered for the reserved posts. (If suitable candidates from the Backward classes are not available, other candidates will be considered for appointment on purely temporary basis).

The minimum qualifications prescribed for the posts other than the posts at serial numbers 7, 12, 15 & 18 are as under:

Professor:

An eminent scholar with published work of high quality, actively engaged in research. Ten year's experience of teaching and or research. Experience of guiding research at doctoral level.

OR

An outstanding Engineer/Technologist with established reputation who has made significant contribution of knowledge.

Reader:

Good academic record with a Doctor's degree in a relevent field. About five year's experience of teaching and/or research and development.

Provided further that candidates not possessing a Doctor's degree may be considered if they have to their credit equivalent research published work or design/development work of high order either in the institution or in an Industry.

OR

In the case of persons to be recruited from industry or Professional field candidates should possess good academic record with recognised professional work of about seven years which should include innovation and/or research and development.

Lecturer:

(a) Master's degree in appropriate field in Engineering/Technology, (b) Consistently good academic record with a Bachelor's degree in Engineering/Technology. First class at Bachelor's degree and/or Master's degree level, (c) One year's relevant Professional experience outside/academic/research Institutions.

Having regard to the requirements of emerging fields of Engineering and/or developing interdisciplinary programme, the requirements of Engineering/Technology degrees may be waived in the cases of otherwise well qualified candidates.

Provided further that if a candidate does not possess Professional experience or a person possessing such experience is not found suitable, the person appointed will be required to obtain desired professional experience within a period of five years of his appointment, failing which he will not be able to earn future increments until he fulfils this requirement.

The minimum qualifications prescribed for the posts at serial numbers 7, 12, 15 & 18 are as under:

Reader:

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five year's experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding record of teaching/research.

Lecturer:

Good academic record with Master's Degree in the relevant subject with at least 55% marks or its equivalent grade.

The additional qualifications prescribed for the posts are as under:

1. Professor of Fibre Science	:	The candidates who have worked on the structure of Textile fibres and on the physical and chemical interaction between textile fibres and dyestufe and chemicals are preferred. Exposure to high-tech. Fibres is desirable. Experience of technical consultation given to textile and allied industriees is desirable.
2. Professor of Paint Technology	:	Specialisation in Modern methods of surface coatings, such as UV curing, powder coating, electro deposition, etc. is desirable. Familiarity with newer resins for surface coating is desirable. Consulting experience with industry is useful.
3. Professor of Pharmaceutical Chemistry	:	Candidate should be actively engaged in research work in any branch of Pharmaceutical Chemistry i.e. drug synthesis, mechanism of organic reactions/drug action, steriochemistry, bio-organic chemistry, process technology etc.
4. Professor of Physical Chemistry	:	Expertise in one of the following areas will be considered as desirable additional qualification. (i) Surface and interface science. (ii) Homogeneous or heterogeneous catalysis.
5. Professor of Polymer Technology	:	Specialisation in newer methods of polymerisation/newer methods of polymer processing/polymer blends and alloys/thermoplastic elastomers is desirable. Consulting experience with industry is useful.
6. Reader in Biochemical Engineering	:	Doctorate in Biochemical Engineering/Chemical Engineering/Chemical Technology with Bachelor's or Master's degree in any of the above branches. Experience in Biochemical Engineering or Fermentation Technology is important. Consultancy experience will be an added advantage.
7. Reader in Mathematics	:	The candidate should possess Ph.D. in Mathematics with specialization in Mechanics of solid and/or Mechanics of Fluids of a recognised University; publications of papers in journals of standing; 6-7 years experience of teaching Mathematics Engineering/Technological institutes at degree and post-graduate. Ability to teach Mathematics, statistical methods, numerical analysis to engineering and Technology students is desirable.

8. Reader in Mechanical Engineering : Expertise in Machine design/Chemical process equipment design/plastic engineering.

9. Reader in Paint Technology : Expertise in the field of processing techniques of paint vehicles paints and printing inks is desirable.

10. Reader in Pharmacy : Teaching/research experience in the area of Pharmaceutics/Biopharmaceutics both at under-graduate and post-graduate level is desirable. Knowledge of computer applications in pharmacy is desirable.

11. Reader in Pharmacology and Physiology : Candidates with M.B.B.S./M.D. or Ph.D. in Pharmacology are preferred. Candidates from Faculty of Medicine may opt for non-practicing allowances on the approval by the University.

12. Reader in Physico-inorganic Chemistry : Specialization in the following areas is considered as desirable.
(i) Organometallic Chemistry and/or homogeneous catalysis.
(ii) Surface and Interface Science.

3. Sir Homi Mehta Reader in Technology of High Polymers : Expertise in the field of plastic processing, product design, background in engineering plastics will be added qualification.

14. Lecturer in Chemical Engineering : Experience in computer aided design/process dynamics and control is preferred.

15. Lecturer in Colour Physics : Two years post Doctoral experience in one or more of the following areas:
(1) Electro Microscopy/X-rays, (2) Polymer Physics, (3) Solid State Physics, (4) Spectroscopy/Colour Measurements.

16. Lecturer in Food Technology : No additional qualification has been prescribed.

17. Lecturer in General Engineering : Master's degree in Mechanical/Plastic Engineering/Production Engineering. Experience in workshop and engineering laboratories is preferred.

18. Lecturer in Mathematics : M.Sc. and M.Phil. in Applied Mathematics, Fluid Mechanics and/or similar field of specialization of a recognised University; 4-5 years experience of teaching pure and applied Mathematics Statistical Methods, Numerical Analysis to Engineering students at degree level.

19. Lecturer in Pharmaceutics : Aptitude for research in Industrial Pharmacy/Biopharmaceutics is desirable.

20. Lecturer in Polymer Technology : Knowledge in the field of Rubber Technology including thermoplastics elastomers is desirable.

21. Lecturer in Textile Chemistry : Research Experience in the field of Fibre Chemistry/Physico-Chemical studies of pretreatment, colouration or finishing will be an added qualification.

Explanation: (1) For determining "good academic record" the following criteria shall be adopted:

(i) A candidate holding, a Ph.D. degree should possess at least a second class Master's degree or must have passed Semester-I and II examinations of M.Chem. Engg./M.Sc. (Tech.)/M.Pharm. degree and completed at least two terms of attendance after his registration for the Master's degree and have been permitted to change his registration to the degree of Ph.D. in Technology under the relevant regulation.

(ii) A candidate without a Ph.D. degree should possess a high Second Class Master's Degree and Second Class in the Bachelor's degree **or**

(iii) A candidate not possessing a Ph.D. degree but possessing a Second Class Master's Degree should have obtained First Class in the Bachelor's Degree.

(2) Candidates having secured marks more than the mid-point of the prescribed minimum marks for passing an examination in the Second Class and the prescribed minimum marks for passing an examination in the First Class by the University shall be deemed to have passed that examination in the high Second Class.

The qualification regarding experience is relaxable at the discretion of the Executive Council on the recommendation of the Selection Committee in the case of candidates belonging to the Scheduled Castes, Scheduled Tribes, Denotified Tribes and Nomadic Tribes.

Nine copies of the application in the prescribed form, together with copies of certificates and the prescribed fee, should be sent in an envelope subscribed "APPLICATION FOR THE POST OF............", so as to reach the Director, Department of Chemical Technology, Matunga, Bombay-400 019, on or before **Wednesday, the 10th October, 1990.** Candidates from abroad, Andaman and Nicobar Island and Lakshadweep may send their applications so as to reach the Director on or before Saturday, the 20th October, 1990. Candidates who are already employed shall send their applications through proper channel. Incomplete and applications on plain paper will not be considered. Canvassing, direct or indirect, will be a disqualification.

A set of prescribed forms of nine applications can be had at the counter of the Department on payment of Rs. 10/- in cash. A request for supply of set of nine prescribed forms by post should be made sufficiently in advance with self-addressed envelope of the size of 27 x 12 cms. and Crossed Indian Postal Order or a crossed Demand Draft on scheduled Bank for Rs. 10/- drawn in favour of the "Director, University Department of Chemical Technology, Matunga, Bombay-400 019, payable at Bombay".

Note: * The post is subject to sanction of the State Government.

BOMBAY-400 019.
DATE: 30th August, 1990.

M.M. Sharma
DIRECTOR

GOA University
Taleigao Plateau, Goa.

Advt. No. 18/90 Dated: 1.9.90

Applications are invited for the following posts in the prescribed form together with copies of certificates and an application fee of Rs. 10.00 (Rs. 5.00 for candidates belonging to SC/ST category) so as reach the Registrar, Goa University, P.O. Santa-Cruz, Teleigao Plateau, Goa 403 005 on or before **10.10.1990 from Inland candidates and 25.10.1990 from candidates residing abroad.** The University reserves the right of accepting/rejecting applications received after the last date fixed for receipt of applications.

2. Prescribed forms of applications can be had in person free of charge from the Registrar's Office or on payment of Rs. 10.00 by crossed demand draft drawn in favour of the Registrar, Goa University on the State Bank of India, Panaji **OR** Bambolim **OR** by Indian Postal Order **OR** by challan in the State Bank of India, University Branch, Bambolim. Goa.

3. The minimum qualifications and the scales of pay of these posts are as prescribed by the University Grants Commission from time to time. Candidates who have passed/appeared for the eligibility test conducted by UGC will be given preference. Besides the minimum qualifications, the additional/desirable qualifications prescribed for the posts will be circulated by way of a handout to the candidates concerned along with the application forms. The posts also carry allowances as admissible to the Goa State Government Employees. A higher starting pay may be considered for exceptionally qualified persons.

Sr. No.	Name of the post	No. of post
	(A) University Teaching Departments	
	I. PROFESSOR	
1.	English	1
2.	Marathi	1
3.	Sociololgy	1
4.	Physics	1
5.	Marine Science	1
6.	Marine Biotechnology	3
7.	Management Studies	1
8.	Computer Science	2
9.	Botany	1
10.	Zoology	1
11.	Geology	1
	II. READER	
1.	English	1
2.	Marathi	2
3.	Konkani	2
4.	French	2
5.	Economics	1
6.	History	1
7.	Mathematics	1
8.	Marine Science	1
9.	Computer Science	4
10.	Marine Biotechnology	1
11.	Commerce	2
12.	Botany	2
13.	Zoology	2
	III. LECTURERS	
1.	English	1
2.	Marathi	1
3.	Konkani	1
4.	Portuguese	1
5.	Philosophy	1
6.	Political Science	1
7.	History	1
8.	Physics	1
9.	Marine Science	1
10.	Computer Science	3
11.	Marine Biotechnology	2
12.	Botany	3
13.	Zoology	3
	(B) Centre for Latine American Studies	
1.	Professor of History/Political Science/Economics/Sociology with specialisation in Latin American Studies	1
2.	Reader in Economics/Political Science/History/Sociology with specialisation in Latin American Studies.	1
3.	Lecturer in Spanish	1
	(C) Centre for Womens Studies	
1.	**Junior Research Fellowships**	**2**
	(tenable for 2 years)	

Eligibility: Those who are qualified in the U.G.C.'s J.R.F. test in Humanities/Social Sciences to send application on **plain paper** giving full Bio-data.

Each applicant has to send 10 copies of the application, one of which will be handwritten or typed and the rest could be xeroxed.

The applications will be screened by a Screening Committee which will be competent to classify them on the basis of qualifications and experience and recommend candidates for being called for interview.

Reservation exists for SC/ST candidates for the post of lecturers as per the rules. The number of vacancies may change. The University reserves the right to prepare panels of suitable candidates for appointment against new vacancies occurring within a period of one and a half years from the date of the meeting of the respective Selection Committee.

It will be open to the University to consider names of suitable candidates who may not have applied in response to this advertisement but are otherwise qualified and considered suitable.

Canvassing in any form by or on behalf of the candidates will disqualify him/her.

The University reserves the right not to fill up any of the vacancies advertised, if the circumstances so warrant.

Dr. S.K. Gandhe
REGISTRAR

PUNJABI UNIVERSITY
PATIALA

Advt. No. 66/PRO/Rect.
Dated: 7 September, 1990

Applications on the prescribed form are invited for the following posts so as to reach the Deputy Registrar (Establishment) by **October 3, 1990.**

PROFESSORS: One each in Mathematics, Botany, Computer Science & Applications and Sports Science.

SPECIALIZATIONS

Mathematics: Applied Mathematics (Continuum Mechanics) Algebra, Functional Analysis, Theory of Functions, Topology.

Botany: Mycology and Plant Pathology/Plant Taxonomy Algology/Plant Physiology/Cytology.

Computer Science & Applications

Theoretical Computer Science/Computer Graphics/Artificial Intelligence/DBMS/Software Engineering/Computer System/Modelling & Performance Evaluation/Distributed Computing/Parallel Computing/Fifth Generation Computer Systems/Operating Systems.

Sports Science

(1) The candidate should hold M.Sc. & Ph.D. degree in Human Biology/Biochemistry/Physiology.
(2) Sports Morphology/Exercise physiology/Sports Bio-Chemistry. Research experience must be of inter-disciplinary nature relating to the above mentioned specializations as evidenced from published research work.

READERS:

Two for Master of Business Administration Programme at Guru Kashi Institute of Advanced Studies in Rural Development, Damdama Sahib. One each in Punjabi, Psychology, Hindi and Economics (Correspondence Courses).

SPECIALIZATIONS:

Master of Business Administration Programme (Guru Kashi Institute of Advanced Studies, Damdama Sahib)

First Post: Production and Materials Management/Human Resource Management/Accounting & Finance/Management of Rural Development.

Second Post: Financial/Production/Personnel Management.

Psychology: Experimental/Social/Clinical Psychology.

Hindi: Fiction/Linguistics.

Economics (Correspondence Courses)

(i) Quantitative methods in Economics.
(ii) Political Economy of Development.

LECTURERS:

Two for Master of Business Administration Programme at Guru Kashi Institute of

Advanced Studies in Rural Development, Damdama Sahib; Two each in Persian & Punjabi; One in Economics and one in History (Correspondence Courses); and one each in Political Science, Psychology and Botany.

SPECIALIZATIONS:

Master of Business Administration Programme (Damdama Sahib)

First Post: Production and Materials Management/Human Resource Management/ Accounting & Finance/Management of Rural Development.

Second Post: Financial/Production/Personnel Management.

Persian: Classical Literature (Preference to candidates who possess M.A. degree in Urdu/Arabic also).

Economics

(i) Quantitative methods in Economics.

(ii) Economics of Development and Planning.

History:

History of India (Modern Period)

History & Culture of Punjab.

Political Science:

National/International Politics.

Psychology:

Physiological Psychology/Organisational Behaviour/Developmental Psychology.

Botany:

Cell Biology/Morphology/Cytogenetics.

Punjabi (for one post): Linguistics

NOTE:

1. These posts carry UGC pay-scales. Only specializations/desirable qualifications have been given in this advertisement. Detailed qualifications as prescribed by the UGC will be supplied along with the application form.
2. Candidates must possess working knowledge of Punjabi.
3. Incomplete applications will not be entertained.
4. It is not obligatory on the part of the University to call for interview every candidate who possesses the essential qualifications.

APPLICATION FORMS can be obtained from the Head, University Publication Bureau, on payment of Rs. 15/- at the Counter or by sending an IPO for Rs. 15/- in favour of the Registrar, along with a self-addressed envelope 25 × 10 cms.) affixed with postage stamps worth Rs. 7/- and indicating on it the name of the post applied for.

REGISTRAR

INDIAN INSTITUTE OF GEOMAGNETISM

DR. NANABHOY MOOS MARG,
COLABA, BOMBAY 400 005.

(An autonomous Institute under Department of Science and Technology, Government of India)

Invites applications from Indian Nationals for the following posts:

(1) **Fellow:** (2 posts in scale Rs. 2200-4000)
Requirements: (i) A good Master's Degree in Physics/Applied Physics/ Radio Physics/Geophysics/Geology/ Pure or Applied Mathematics; (ii) Three years research experience in geomagnetism or allied fields; (iii) Age 35 years and below.

(2) **Computer Programmer:** (1 post in scale Rs. 2200-4000)
Requirements: (i) A good Master's Degree in Physics/Applied Physics/ Radio Physics/Geophysics/Geology/ Pure or Applied Mathematics with three years experience in Computer Programming; (ii) Age 35 years and below.

(3) **Research Associate:** (1 post in scale Rs. 2000-3500)
Requirements: (i) A good Master's Degree in Physics/Applied Physics/ Radio Physics/Geophysics/Geology/ Pure or Applied Mathematics; (ii) Age 30 years and below.

(4) **Senior Scientific Assistant:** (2 posts in scale Rs. 1640-2900)
Requirements: (i) Master's Degree in Physics/Applied Physics/Radio Physics/ Geophysics/Geology/Pure or Applied Mathematics; (ii) Age 30 years and below.

(5) **Research Scholars:** (6) **Scholarship:** Rs. 1800/- in first and second year and Rs. 2100/- in subsequent years.
Requirements: (i) A good Master's Degree in Physics/Applied Physics/ Radio Physics/Geophysics/Geology/ Pure or Applied Mathematics. Should have qualified in the joint UGC-CSIR or an equivalent national test; (ii) Age 25 years and below.

Prescribed application form and details of the advertisement can be obtained by post from the ADMINISTRATIVE OFFICER, INDIAN INSTITUTE OF GEOMAGNETISM, DR. NANABHOY MOOS MARG, COLABA, BOMBAY 400 005, by sending a self-addressed and stamped (Rs. 02.00) envelope of 10 cm x 25 cm size. Completed application should be sent in a cover superscribed with the name of the post applied for so as to reach the Administrative Officer within **30 days of the publication of this advertisement.**

ADVERTISEMENT

Applications are invited on plain paper giving full details of academic qualifications for one (1) Junior Research Fellowship in a research project sponsored by the Department of Atomic Energy, Government of India and entitled "Electromagnetic Signature of Biological Clock" under Dr. P. Nongkynrih, Institute of Self Organising Systems and Biophysics, NEHU. Candidates with a first class Master's degree in Physics or Chemistry or Biochemistry or allied subjects shall be considered for appointment. Fellowship (JRF) of Rs. 1800/- p.m. is sanctioned for the first two years. With satisfactory evidence of progress, this will be raised to a Senior Research Fellowship of Rs. 2100/- p.m. for one year. Last date for receipt of application is **2nd October, 1990.**

Dr. (Miss) P. Nongkynrih,
Institute of Self Organising Systems
and Biophysics,
North Eastern Hill University,
Shillong.

RABINDRA BHARATI UNIVERSITY

CALCUTTA-50.

Employment Notification No. RB 64/90 Dated: 6.9.90

CORRIGENDUM

Post under (B)—(5):—Reader in Rabindra Sangeet—One Post. **(c)** teaching experience upto Post-Graduate level with sound knowledge and background preferably in Hindusthani Classical Music instead of teaching experience in the subject upto P.G. level as notified.

Post under (C)—(1):—Lecturer in Philosophy—One Post—**may be treated as Cancelled** (wrongly advertised).

(3) Lecturer in Vocal Music—2 Posts:—One Post for Bengali Song while the other post for Khayal instead of one post with specialization in Bengali Song as notified.

Post under (D):—Accompanist in Dance—Two Posts—one for Pung-Drum (Khol) and other **for Pakhawaj instead of Sarod/Sitar** as notified.

ADDENDUM

Reader in Political Science—One Post.

Qualifications—as notified under B(1) and (2) of Notification No. RB 64/90.

N.B.: Last date for submission of application forms for all posts under notification No. RB 64/90 and under addendum is extended upto **21.9.1990.**

REGISTRAR

G.B. PANT UNIV. OF AGRIC. & TECH

PANTNAGAR-263145

EMPLOYMENT NOTICE NO. 2/1990

Applications are invited for various posts of this University as listed below:

Application forms can be obtained from the office of the Chief Personnel Officer (Recruitment Section) of this University by sending a self-addressed Rs. 4.00 stamped envelope (23 x 10 cm size) with the name of the post inscribed thereon. Allowances will be at the U.P. Government rates. Services of Government servants or from established Institutions are obtainable on deputation. Higher starting salary is admissible in deserving cases. Residential accommodation within the campus may be possible to certain extent depending upon the availability of the houses. Selected candidates will be admissible only for pensionary benefits as per rules of the University.

Complete application forms alongwith attested copies of relevant certificates etc. and application fee of Rs. 10/- in the form of crossed postal order in favour of Comptroller, G.B. Pant University of Agriculture and Technology, Pantnagar (Post Office) should be sent to the Chief Personnel Officer (Recruitment Section), G.B. Pant University of Agriculture and Technology-263 145 U.P. by **8.10.1990** at the latest. Applications received after the due date from any candidate either local or outside will not be entertained. The number of vacancies may be increased/decreased or withdrawn according to the requirements. Separate application is required for each post.

In the case of teaching posts there will be no reservation for the candidates of the scheduled castes and scheduled tribes. They shall be called for interview if they fulfil the minimum qualifications. Even if they are lower in order of merit and provided other things are found equal, they would be given preference.

PAY SCALES

1. Professor (Rs. 4500-7300)
2. Associate Professor (Rs. 3700-5700)
3. Assistant Professor/Training Associate (Rs. 2200-4000)

NOTE:

Candidates who had already applied for various posts in respect of the specializations of Microbiology & Public Health, Gynaecology & Obstetrics, Surgery & Radiology, Anatomy & Histology, Parasitology, Pathology, Medicine, Child Development, Plant Physiology and Animal Sciences, in response to our Employment Notice No. 1/1988, need not apply again, however, they may intimate their willingness in writing alongwith up-to-date biodata to reconsider their candidature again.

COLLEGE OF VETERINARY SCIENCES

1. Professor:	
(a) Veterinary Clinics	: 1 post
(b) Gynaecology & Obstetrics	: 1 post
(c) Veterinary Microbiology & Public Health	: 1 post
2. Associate Professor:	
(a) Veterinary clinics	: 1 post
(b) Surgery & Radiology	: 1 post
3. Assistant Professor:	
(a) Anatomy & Histology	: 1 post
(b) Parasitology	: 3 posts
(c) Physiology	: 1 post
(d) Pharmacology & Toxicology	: 1 post
(e) Pathology	: 1 post
(f) Medicine	: 3 posts.

QUALIFICATIONS:

PROFESSORS:

Essential:

1. Doctorate degree in the subject concerned or related field with atleast second class or equivalent in the last degree examination with Bachelor's degree in Veterinary Sciences.
2. Ten years experience of teaching degree classes/research as evidenced by publications/professional experience in the subject.
3. Ability to conduct and guide research.

Desirable:

1. Eminent standing in the profession.
2. P.G. teaching experience.
3. Experience in administration.

ASSOCIATE PROFESSORS:

Essential:

1. High Second Class Master's degree or equivalent in the subject concerned or in the related field with Bachelor's degree in Vety. Sciences.
2. Five years experience of teaching degree classes/research as evidenced by publications/professional experience in the subject.
3. Ability to conduct and guide research.

Desirable:

1. Doctorate degree in the subject.
2. Experience of P.G. teaching.

ASSISTANT PROFESSORS:

Essential:

1. High Second Class Master's degree or equivalent in the subject concerned or in the related field with B.V.Sc. & A.H. degree.

Desirable:

1. Doctorate degree in the subject concerned.
2. Two years teaching/research or professional experience in the subject.

COLLEGE OF HOME SCIENCE

1. Professors:	
(a) Child Development	: 1 post
(b) Clothing & Textiles	: 1 post
(c) Family Resource Management	: 1 post
(d) Home Science Extension	: 1 post
2. Associate Professors:	
(a) Child Development	: 1 post
(b) Clothing & Textiles	: 1 post
3. Assistant Professors:	
(a) Child Development	: 2 posts
(b) Clothing & Textiles	: 2 posts
(c) Foods & Nutritions	: 1 post
(d) Home Science Extension	: 1 post
(e) Family Resource Management	: 1 post
(f) Art & Interior Decoration	: 1 post

QUALIFICATIONS:

PROFESSORS:

Essential:

1. High 2nd class Master's degree in Home Science or in related field in the subject concerned with 1st class Bachelor's degree in Home Science.

   OR

   1st class Master's degree in Home Science or in related field in the subject concerned with high 2nd class Bachelor's degree in Home Science.
2. 10 years teaching/research/extension experience (research experience to be supported by publications in professional journals).
3. Ability to conduct and guide research.

Desirable:

1. Doctorate degree in the subject concerned.
2. Experience in administration.

ASSOCIATE PROFESSORS:

Essential:

1. High 2nd class Master's degree in Home Science or in related field in the subject concerned with 1st class Bachelor's degree in Home Science.

   OR

   1st class master's degree in Home Science or in related field in the subject concerned with high 2nd class Bachelor's degree in Home Science.

2. 5 years teaching/research/extension experience (research experience to be supported by publications in professional journals).
3. Ability to conduct and guide research.

Desirable

1. Doctorate degree in the subject concerned.
2. Experience of Post-graduate teaching.

ASSISTANT PROFESSORS FOR POSTS AT SL. a to e.

Essential

1. Consistently good academic record with high second class bachelor's degree in Home Science and good second class Master's degree in Home Science in the subject concerned or in a related field.

Desirable

1. Two years teaching, research and extension experience in the subject.
2. Ph.D. in the subject.

FOR THE POST OF ART & INTERIOR DECORATION

Essential

1. Master's degree in Fine Arts/an equivalent Diploma in Fine Arts of a statutory University or a recognised institute or an equivalent qualification of a foreign University with a consistently good academic record.

Desirable:

Two years teaching/professional experience.

Knowledge of crafts, betik and tie & dye.

COLLEGE OF BASIC SCIENCES & HUMANITIES

1. Assistant Professor Plant Physiology : 2 posts

QUALIFICATIONS:

Essential:

(a) Doctorate degree and,

(b) Consistently good academic record with first class (B in seven point scale) Master's degree in the relevant subject or an equivalent degree of a foreign University.

(Having regard to the need for developing interdisciplinary programmes) the degree (a) and (b) above may be in the relevant subject.)

Provided that if the selection committee is of the view that the research work of the candidate as evident either from his thesis or from his published work is of very high standard it may relax any of the qualifications in (b) above.

Provided further that if a candidate possessing a Doctorate degree is not available or is not considered suitable, a person possessing a consistently good academic record (Weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research, for at least two years or has practical experience in a research laboratory/organization on the condition that he will obtain a Doctorate degree within 5 years of the appointment failing which he will not be able to earn future increments until he fulfils the requirement.

Explanation:

1. Candidates for being eligible for recruitment to the post of Assistant Professor must have a first or high second class (B in seven point scale) at the Master's level and for determining consistently good record, everage of 50-55% (B in seven point scale) may be expected at the two examinations prior to the Master's examination.

Specialization:

Mineral Nutrition of Plants/Growth and Development/Water relations of Plants/Stress Physiology.

KRISHI VIGYAN KENDRA HILL CAMPUS RANICHAURI (DISTT. TEHRI GARHWAL)

1. Training Associate (Forestry) : 1 post

Qualifications:

1. Master's degree in Forestry OR Associate from Indian Forest College, Dehradun.

OR

Ph.D. in any allied subject (Horticulture/Agriculture Botany/Botany/Agronomy/Forest Ecology/Soil Science.

2. Training Associate (Animal Sciences) : 1 post.

Qualifications:

1. Master's degree as well as Ph.D. degree in Animal Science (Breeding/Nutrition/Livestock Production and Management). OR M.V.Sc. Veterinary Medicine.

CHIEF PERSONNEL OFFICER

New

A Course in Phonetics and Spoken English

by

J. SETHI
Professor of English
Central Institute of English and Foreign Languages
Hyderabad

P.V. DHAMIJA
Reader
Department of Phonetics and Spoken English
Central Institute of English and Foreign Languages
Hyderabad

Starting with general phonetics, the book goes on to give a brief functional account of general phonology and then a selective yet fairly exhaustive description of the phonetics and phonology of English.

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Eastern Economy Edition

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University News

MONDAY, SEPTEMBER 24, 1990

Rs. 2.50

BITS Silver Jubilee Celebrations

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE PILANI

"An Improbable Achievement—BITS—A Profile of Change" being presented to Hon'ble Shri R. Venkataraman, President of India, by Dr. S. Venkateswaran, Director, BITS. Shri K.K. Birla, Chairman, BITS and Ms. Sumitra Singh, Minister for Higher Education, Government of Rajasthan, are also seen in the picture.

UNIVERSITY OF DELHI
DELHI-110007.

Ref: Estab. IV/Advt./125/Edu/90/

Dated: Sept. 14, 1990

Applications, on the prescribed form, are invited for the following posts for the under-noted programmes (presently for the period ending 31.3.1991 but likely to continue) in the *Department of Education,* University of Delhi, Delhi so as to reach the REGISTRAR, UNIVERSITY OF DELHI, DELHI-110007, by Friday, **October 12, 1990:-**

Sl. No.	**Name of the Programme**	**Post**	**Special/desirable qualifications**
1.	Maulana Azad Centre for Elementary and Social Education (MACESE)	P-2 R-2 L-3 RA-1	Preference will be given to candidates having experience in Teacher Education (including Extension work in Education) or Curriculum Development in the Area of Elementary Education or organization of Community Services or research related to Elementary Education.
2.	Institute of Advanced Studies in Education (IASE)	P-1	Preference will be given to candidates having 10 years' teaching experience in Teacher-Training College/ Department of Education (including five years' teaching experience at Post-Graduate level/in organization and promotion of in-service programme for secondary school teachers).
		R-1	Preference will be given for having 8 years' teaching experience in Teacher-Training College/Department of Education (including five years' teaching experience at Post-Graduate level/in organization and promotion of in-service programme for secondary school teaching).

SCALES OF PAY:

Professor (P) Rs. 4500-150-5700-200-7300
Reader (R) Rs. 3700-125-4950-150-5700
Lecturer (L) Rs. 2200-75-2800-100-4000
Research
Associate(RA) (a) Rs. 2200-100-2700
(b) Rs. 2700-100-3200
(c) Rs. 3200-100-3700
(d) Rs. 3700-125-4325

Depending upon the recommendations of the Selection Committee.

All the above posts, other than a post of the Research Associate, carry DA, CCA, HRA etc. as are admissible under the rules inforce in the University from time to time.

The details regarding prescribed essential qualifications and application forms for various posts can be had from Establishment Section-IV (Room No. 205), New Administrative Block, University of Delhi, Delhi-110007, during working hours, either personally or by sending a self-addressed and postage stamped (worth Rs. 8/-) envelope (size 13 cm × 28 cm).

Delhi-110007;
September 14, 1990

J.C. Kochhar
REGISTRAR (OFFG.)

5 OCT 1990
C.F.T.R

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

From Miseducation to Re-education

K. Venkata Reddy*

Traditional education has made stereotypes of men in their life and work situations. Historically rooted, mechanistic, authoritarian and irrelevant to life itself, the present day education may be termed miseducation. Submitting himself to the various forms of miseducation, man has lost his sense of values and the spirit of self-discovery. What is, therefore, most called for, is the adoption of a completely new system of education and training in which self-awareness, self-employment and self-achievement will be emphasized.

Concerned very much with the past, current education ignores the present and hardly bothers about the future. Content-wise its emphasis is mostly historical—always a backward emphasis on what has happened, seldom encouraging perception of what is happening and what is likely to happen.

Mechanistic in terms of the process of both teaching and learning, current education lays emphasis chiefly on memory, something a modern computer can do more effectively. There is very little concern with insight or understanding—something a computer cannot do. Discretion, reflection, intuition are all subservient to sucking and vomiting information.

Grossly authoritarian in character, current education discourages genuine enquiry. Questioning basic issues is forbidden. Its goal is regimentation instead of development of individuality. It puts the teacher under the shadow of authority and the student under the fear of the teacher.

Above all, current education has become largely irrelevant both to life and to vocation. It does not permit the discovery of personal values. It teaches grammar, for instance, but ignores the impact of language on thought. It teaches how to solve problems in algebra, but not how to resolve conflicts in life.

A victim of the bane of the present miseducation, the adolescent prostitutes his youth, his energy and his spontaneity to either film stars or cricket heroes, or falls a prey to the cunning diplomacy of political leaders. He has no genuine questions to ask, and no sense of personal or social responsibilities. He has lost contact with his true self and is in pursuit of goals that are anti-human and self-defeating. A change in the present state of affairs could be effected only by moving away from miseducation to psychological re-education.

Since current education is concerned mainly with the historical, re-education should lay greater emphasis on the here and now. If conventional education describes what has happened, re-education must deal with the perception of what is happening. The proportion of knowledge to be imparted must be 25 per cent of the past, 50 per cent of the present and 25 per cent of the future. The more we move away from the backward emphasis the greater the opportunity for dealing creatively with the unique challenges of today.

(Contd. on page 7)

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* *Professor of English, Sri Krishnadevaraya University,*
Sri Venkateswara Puram (P.O.), Anantapur-515 003 (A.P.)

Promoting Applications of Science

Interaction between Universities & Industries

M.D. Tiwari*

Impact of Science on the Standard of Living

Mankind has always experienced the need for efficiency in technique and a deepened insight into the laws of nature to provide food, energy and materials necessary for survival at the lowest level for and beyond this an improved standard of living. In many fields of life, the systematic research for, and the development of an analytical understanding of the fundamentals of nature were long preceded by an intuitive development of the technical means appropriate to the struggle for life. But once theoretical explanations had been formulated, they helped man improve on his intuitive solutions and develop others that were appropriate to new levels of living. The patterns discerned opened his eyes and aroused his hunger for more and more knowledge. Science began to grow and generate knowledge, that transferred to continually expanding industries could be applied to satisfying man's wants with ever increasing efficiency.

The Process of Applying New Knowledge

Until a few generations ago, communication links between scientists and their colleagues in the developing industries were often open and direct, even if their geographic reach was fairly short. Many an inventor could master the relevant science of his time as demonstrated by Siemens, Roentgen, Polhem, Ericsson and Edison.

The transfer of new scientific results to technical applications began to accelerate, the limiting factor from the beginning being the sparse availability of economic resources and, let us not forget, the inertia in human minds and social structures. In those communities, however, where the economy expanded most rapidly and where new social structures developed, there followed an almost overwhelming industrial progress that induced a rapidly expanding search for still more knowledge that could be applied to the welfare of the people. This search spread rapidly from country to country.

In the early stages, the time required to carry a new idea from its conception through the necessary development to a marketable product was often rather short and people soon began to conclude that investments in science and technology would yield "inexhaustible" profits for a nation and its citizens. Let us recall the early development of the energy supply systems, growth of iron and steel production and the chemical industry.

During the last century the industrialized countries were able to improve their welfare enormously and to secure their supply of energy, food and raw materials to an unprecedented extent. The "miraculous" expansion of science and technology during this time was one of the dominating factors underlying the change.

Today the fast growing consumption in the world has caught up with the capacity to supply and the world is once more facing a relative shortage of basic resources. It is, therefore, felt that not only the future growth but even the maintenance of the present welfare is threatened. All over the world great efforts are being made to counter this by the coordination and mobilization of the present enormous research capacity, technical skill and economic resources.

At the same time, the efficiency of the transfer process seems to have deteriorated. Too much money and manpower has been spent with disappointing results and far too many efforts have turned into failures. The obvious cause of this negative outcome is that too little regard has been paid to the complex set of conditions that now-a-days must be fulfilled if a project is to have a fair chance of success. It is worth while therefore to pay some attention to the very complexity of conditions, the "frame of reference", that now is guiding our transfer processes, before trying to evaluate the different proposals put forward. This, however, is seldom or never done! Especially attention should be paid to all the critical conflicts of objective that are growing more and more difficult to solve.

Universities and Industries Drift Apart

Stimulated by the initial success of introducing scientific knowledge into growing industries, nations and industries themselves rapidly increased their investments in science and technology. Then, gradually, the relationship between the academic and the technical world began to change. The capital of accumulated knowledge began to surpass the immediate needs of industry and society, thus becoming the internal concern of the academic world. The facts and laws of nature that were easily accessible were revealed and new data became more and more difficult to uncover. New generations of scientists were forced to search much deeper into the hidden secrets of nature to unravel more fundamental and more detailed information. More advanced equipment had to be developed. Research programmes grew so complex that it became necessary to organize teams of specialists cooperating on a common project whilst the projects themselves concentrated on ever finer details within a scientific field. As a consequence, the possibilities for the scientists to communicate with their colleagues working in industries or even in slightly different branches of science became severely reduced.

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* *Joint Director, University Grants Commission, Bahadurshah Zafar Marg, New Delhi-110002.*

Industry underwent a corresponding development but in an entirely different direction. Its frame of reference also became ever more complex. Around every industry in the market economy there developed structures in market forces and competition, whilst, inside the planned economies, equivalent steering rules were introduced. A great variety of laws and restrictions created fences of constraints limiting industrial activities, which in turn led to a growing dominance in many industries of lawyers, economists and marketing people with a consequent depletion of scientific authority. So academic science and industrial technology began to drift apart, each with its own set of objectives and beset by its own internal conflicts.

From Pure Research to Practical Innovation

At this point it would be appropriate to introduce another consequence of the above mentioned development. The concept of Research became split into subgroups which should be distinguished in order to avoid confusion. These subgroups are:

Fundamental research comprising the search for fundamental knowledge, patterns, theories.

Object-centred research comprising the search for answers or solutions to specific problems with applications in mind.

Technical research and development aimed at creating new or improved products, functions, processes or systems of value to society.

Demonstration designed to confront new developments with the trials of the real world: practical operation on a full scale, economics of application, market response, environmental restrictions etc.

Innovation as the final outcome of research and development including demonstration if necessary, when the tests have been passed successfully.

Applied Science

Applied Science should mean the result of a process in which the knowledge acquired in science research is transferred to practical use. Preferably this phrase should not be used to describe any special kind of science research.

Discussion of the roles of the educational institutions is often confused by terminological misunderstandings. It is no wonder that people tend to talk past each other when the subject is not a highly specific part of science. Finally, it would be noted, that it is common to discuss the complete chain of activities along the above mentioned stages as RD&D (research, development and demonstration).

Influences Acting on the Application of Science

There is broad variety of ways in which a knowledge of science is applied, that differ from country to country and depend on the attitudes of the bodies and people involved in the transfer process. Any attempt to improve the efficiency of the application procedure must start from a realistic evaluation of the specific practices in current use and the different ways in which theses might be modified.

University Science Institutions

Different institutions have different aims, but principally two main types are recognized.

Institutions devoted to pure, fundamental research

These are mainly involved in:

- Free research (unbiased, subject-centred)
- Training of new scientists to think clearly and logically, developing their scientific creativity and analytical skill.
- A secondary aim is to give them qualifications which will equip them for carrying out free science, and gaining as high a rating as possible in the international community of scientists within their own speciality.

The last mentioned aim often tends to make the scientists less interested in the potential applications of their results. It even happens that they acquire negative attitudes to the practical use of their results and to industry in general.

It is obviously important to institute a change in their training procedure, but in part this may follow automatically from the present change in funding policy of many governments and private industries regarding their support to scientific institutions.

Institutions devoted to object-centred research

These are primarily concerned with:

- Training of efficient new personnel for industry as well as certain socio-technical functions (engineers, diploma holders, technicians etc.)

* Development of scientific methods and processes.
* Research for facts of technical relevance.
* Improvement of processes with technical applications.

For these institutions it is ordinarily (but not always) natural to be opened to impulses from industry and to be eager for cooperation with them.

The Industries

It is more difficult to describe the terms of reference under which industries operate. This is immediately obvious already from the large number of widely different industries that exist. Their size varies from very small enterprises to huge concerns employing more than 100000 people.

Normally, the small companies have small economic resources and they are therefore unable to support any R&D activity of their own. The very big companies, on the other hand, often impress with their establised R&D departments, the excellent equipment and high competence in the companies' main field of interest.

Different industrial sectors have a widely differing dependence on advanced R&D; compare the construction industry with the semiconductor and integrated circuits industry. Other industries operate in different economic systems with diverse market conditions. Nevertheless, in spite of these variations it is possible to discern some governing conditions that are common to every industry.

The energy dependence of industry

As a consequence of the present worry about the cost and availability of energy and of the accompanying economic turmoil, a new insight has been gained into the fundamental nature and function of industries.

Industries are organisations whose aim is to supply society with products and services (functions) by using energy from different sources in efficient way. Their energy carrying systems include:

* Directly supplied, convertible energy
* Energy stored in fuels
* Energy invested in materials, equipment etc.
* Energy delivered by human beings (work, functions)

To fulfil its mission every industry must watch permanently those developments of whatever nature that could be used to improve the utilization of its resources.

The fundamental conditions are that energy should be supplied with high thermodynamic efficiency, high availability, good housekeeping (conservation) and at the lowest possible total expenditure (cost). These conditions provoke an ever increasing effort from industry to reduce the total energy cost at every stage of production and it is there that an inflow of ideas and results from science institutions can be of substantial importance.

The primary economic conditions confronting industry

These are set by the market demand and by the counteracting forces of competition to which industries must try to adapt. However, their degrees of freedom are strongly limited by a number of other forces exerted by social regulations, decrees and laws. These are compelling industries to spend substantial parts of their resources on "secondary purposes".

The technical potential of an industry

Obsolete and uneconomic technology has to be continuously replaced by a deeper knowledge and improved technology. This is not a simple process but demands a careful balance of effort as every change of product or process requires new resources to be invested and is thus a potential loss marker.

The multitude of goals and restrictions on the manoeuverability of industries have often resulted in the influence of science on its decisions and activities being muted. Such a consequence, however, may place those same industries in a very perilous positions as they lose vital contacts with the rapid external developments in their own field.

Weighing the options and constraints against each other

Every industry, after its own standard, must organize its project groups for development, its product lines, its marketing stystem, its economy. Every activity has to be managed by specialists in planning, construction, economy, technique and development. This is a very difficult task for every industrial manager.

The industrial manager thus is an entrepreneur who has to play with this complex "keyboard" in order to keep the company alive while supplying the market with reliable products at competitive prices. He usually experiences a constant conflict of objectives—when trying to accomplish his main task while keeping a set of ever more limiting rules. The result is that industrial leaders have often been selected for their ability to solve the immediate problems of production and this special capacity may sometimes make them less suited for the absorption and evaluation of ideas from scientists.

Government and Political Parties

These establishments are clearly aware of the enormous impact that the natural sciences and the technical developments have had on the creation of the modern industrialized nations and their welfare systems. For a very long time therefore they have been stimulating and supporting R&D.

Government should ordinarily accept full responsibility for funding long term fundamental research including long range object-centred research. Today, however, increasing emphasis is put on short-term R&D, the results from which are expected to be applicable to save the nation from the present threat against their supply with energy, food and raw materials. Within the planned economies such considerations evidently are dominating. To that end a lot of measures are taken to ensure, facilitate or stimulate the transfer of acquired knowledge, experiences and technology from university institutions to industries and to the social sectors.

To bring this about, government should establish in cooperation with industrial organisations:

* Special destiny organisation
* University grant committees
* Science research councils
* Engineering broad institutes
* Applied research institutes
* Commissions, R&D funds etc.

These are all examples of trial and error approaches to the problem of reducing the information gap in order to speed up the acquisition of specially wanted knowledge. Together these organisations can have a strong influence on important sectors of R&D through all the resources they are investing. A number of spectacular results are claimed.

Fundamentally, however, they have a common weakness in their inherent difficulties in selecting the best projects and the most capable people to conduct them. The bureaucracy often lacks the competence needed to evaluate the flow of proposals induced by the availability of plenty of money for research. The consequence is that a number of failures have been reducing the efficiency of the overall efforts.

Aware of this dilemma, the government authorities in some countries are trying to attract the cooperation of industries having the competence needed to make the judgments realistic. If such an industry is willing to enter a joint venture together with the government and to invest of its own knowledge and manpower, then this may be looked upon as a confirmation of the potential value of the project.

In USA, Federal Republic of Germany, Japan and other countries, a number of collective research institutes have been established, financed by government and industry with equal shares. This arrangement is considered to be so successful that from modest introduction, there are today many industries, covering silicates, surface chemistry, thermal techniques, optics, glass, iron and steel, corrosion, to mention only a few.

Many countries are pleading for the establishment of industrial parks or technology centres around universities to facilitate the outflow of new knowledge and ideas from research institutes to industrial applications. There are, however, certain constraints that have to be observed. Although in some countries common projects between industries and university institutions are favoured, in others this form of cooperation is restricted by administrative rules. It should also be noted that political pressures can exert misguiding influences on university institutions, causing them to shy away from "tarnishing" contacts with industries and military establishments.

Interaction Between R&D Bodies

Seldom is a particular inflow of scientific and technical knowledge the exclusive interest of a single R&D body within a given country. On the contrary society as a whole is more often concerned. Indeed one could argue that all available knowledge and skill should be coordinated into a common pool, designed to conserve and improve the standard of living.

It is therefore urgent that all possible channels of cooperation be utilized and so far as possible unfavourable constraints removed.

Objects of interaction

Industries are usually seeking knowledge of special value for their products and processes. Thus, they may be asking for:

* Investigations of new fields of potential value
* Object-centred research around their products
* Certain problems to be analysed and solved
* Components and processes to be developed

Industries may establish their own R&D-facilities within fields of vital interest for their own productions. This is often a very efficient way of speeding up the entire development process. It has, however, its limitations. It should be kept in mind, that few companies can spend more than about 1% of their total turnover on research (whereas technical development can take from 1-10% depending on type of industry). Even if a small research group can accomplish substantial results, the R&D activity is so expensive that only rather big companies can afford to keep regular R&D departments. And no company, however big it may be, can pursue R&D in all the fields of potential interest for its future lines of activity. Consequently, efficient ways of cooperating with universities must be developed.

University Institutions may be interested in such cooperation as it can inspire their educational tasks or supply them with scientifically interesting problems. Financial difficulties may also influence their willingness to establish external contacts with research areas of potential applicability. Usually the universities are asking for:

* Trainee jobs
* Subjects for degree work
* Support for conferences and internal projects
* Participation in big projects
* Government research money.

The object-centred research institutions have a self evident demand for projects that fit into big industrial or national programmes financed by industry or government.

Government has a general interest in increasing and improving the output from the industries of the nation. To that end it also has an evident interest in having new generations of scientists and engineers educated and trained to a high standard.

The Government has also a general responsibility for the improvement of the nation's supply of energy, food and raw materials.

Constraints of the desirable interaction

A number of obstacles impede the establishment of cooperation and free flow of information and many useful applications will be hindered if they are not eliminated or reduced. Examples of such obstacles are:

* Inertia in the acceptance of new systems
* Suspicion expressed by opinion formers and politicians
* Difficulties in raising the money needed for R&D
* Economic risks inherent in projects containing unknown and unsolved secondary difficulties
* Overwhelming competition from established systems
* Problems around patent rights
* Excessively long development time
* Different ways of organizing work and alloting time within the different bodies.

For University Institutions may be mentioned especially:

* Insufficient competence in the relevant field
* Available equipment below critical level or out of date
* Lack of experience in conducting projects on to application
* Lack of experience in taking cost-efficiency into account
* Time constraints imposed by Industry
* Unclear rules for external cooperation
* Usually only temporary commitment during the projects life.

Special examples from the Industries are:

* Inadequate understanding of university conditions
* Financial demands of the university on the industry
* Low priority given to research in the industry
* Uncertainty about own competence in the field.

General Recommendations

Universities
should redesign their student training programmes and should focus more on teaching the importance of applying science research. Students should also be trained in cooperating with external organizations.

When possible, institutions should also make it easy for graduates to establish spin-off companies to develop and market products that result from applications of their research.

Industries
should recognise the importance of keeping closely in touch with the academic sphere. The universities and research institutes are basic sources of ideas and techniques which can have a profound impact on long term profitability, competitivity and survival. In many instances, this requires a decisive change of attitude on the part of the top management that is inclined to pay more attention to financial constraints than to technical innovation.

The contacts
between universities and industries are best initiated and kept going based on a person to person relationship. From this starting point should be developed:

* Arrangements for regularly sending trainees from university to industry.
* Arrangements for university teachers to spend a significant time in industry and work there on industrial problems.
* Arrangements for R&D people from industry to come to universities to give lectures and work there an appropriate problems.
* Common workshops, symposia etc., organized around recent development results and problems in selected areas.
* Exchanging lists of problems (industry) and results of potential interest (university).
* Exhibitions where universities could demonstrate what they have found (invented) and what they believe could have potential applications.

Many other forms of cooperation can be visualized. The important thing is that every such contact should have a follow-up and be used as a means of deepening one side's knowledge of the other. One example is that an industry can often support a university institution with special materials for research purposes and sometimes even assist in scientific projects by making available its often more powerful and modern equipment.

Government authorities
through their funding systems can very actively facilitate the cooperation between universities and industry. Well experienced ways are:

* University institutions can be provided with such up-to-date equipment as is necessary for maintaining a high international competence in important fields of science.
* Through the appropriate grant organizations, Government can finance pure university projects of potential applicability and even to initiate such projects.
* Government can also initiate projects in which university institutions and industries both participate by supplying the necessary funds or a substantial part.
* Through such appropriate funding Government can overcome the hesitation on the Industrial side to enter into projects which are involving high economic risks but which could be nationally important applications of science.
* Together with appropriate industries the Government could establish Collective R&D Institutes in fields of high importance. Such institutions should be of a special value to the small and medium sized companies which themselves can not afford to run their own R&D facilities.
* At some places it can be fruitful to establish Science Parks or Technical Centres around universities to facilitate the creation of small spin-off companies and stimulate continued contacts between them and the mother institutions.
* Contact Secretariats set up at universities, or special science and technology bureaucrats can in many instances reduce the natural inertia of the contact processes. They can acquire a broad overview of the activities of their universities as well as of the specialities of the industries in their neighbourhood and thus help establish new contacts. Government can take also administrative measures to facilitate the creation of contacts by:

* Reducing a too cumbersome bureaucracy
* Eliminating legal or institutional hindrances to free cooperation between universities and industry
* Finally it should be emphasized that a mere pressure exerted by Government to induce cooperation may have only a short-lived effect. To develop and maintain a vigorous cooperation it is essential that Government financially supports projects in which both sides have a strong interest. □

From Miseducation to Re-education

(Contd. from page 1)

If the conventional education is mechanistic, re-education should be dynamic and pay attention to the process of learning as discovering. It means not using the mind as a memory box. The process of teaching has to be the process of encouraging meaning-making by the learners for himself.

If current education suffocates enquiry by regimentation instead of liberating the student's mind to question what the teacher says, the re-education system does away with teachers and replaces them by catalysts who encourage discussion among students as well as between teachers and students for the emergence of spontaneous insight.

To make education extremely relevant to life and vocation, re-education must put an end to predetermined curriculum by letting the learner determine what is worth learning. If conventional education starts with the teacher and curriculum, re-education must start with the student and his questions. Education then becomes cooperative endeavour in learning instead of a unilateral enforcement of what the teacher thinks he should teach.

The philosophy behind all these corrective educational measures is simple. It means to help man to return to his own true self. No social change can take place unless it happens in the selfhood of each of us. This awakening of the selfhood should be the task of re-education. The effort to bring about social reform merely by organizational and structural changes is doomed to failure in the long run since the individual can distort or bypass the structure in thousand ways. What we have to attempt, then, is to initiate an educational process in which man flowers into himself.

□

Dimensions of Academic Staff College at Banaras Hindu University

V.N. Pandey*

Background

The University Grants Commission as a follow up of the National Policy on Education (1986) sanctioned the creation of Academic Staff Colleges. Banaras Hindu University was one of the first few Universities in the country to have established the college in the later part of 1987.

The emergence of Academic Staff Colleges has its historical roots. As far back as 1949 the University Education Commission (Radhakrishnan Commission) mooted the idea of educating university teachers in order to improve the quality of education. It was believed that through professional and career development programmes, teachers could be equipped to fulfil their role and responsibility within the educational system in a much better way. Education Commission (Kothari Commission) (1964-66) again reiterated the idea of starting orientation programmes for university and college teachers.

By inculcating scientific temper, independence of mind, refinement of sensitivities and perception among teachers, education is expected to further the goals of socialism, secularism and democracy enshrined in our Constitution. Higher Education is considered vital for the people because it provides them an opportunity to reflect on critical social, economic, cultural, moral and spiritual issues facing humanity.

The National Policy on Education considered the quality and status of teachers of vital importance. The Policy stated "The status of teachers reflects the socio-cultural ethos of a society. It is said that no people can rise above the level of its teachers." (p. 25) Standard of education and training that is imparted to teachers during their service and pre-service periods determines the quality of teachers. In order to develop required competence a teacher has to be prepared in a professional college through a regular training or Orientation Programmes.

Therefore to achieve the desired results following steps have been envisaged under National Policy on Education through Academic Staff Colleges:

(a) To organise specially designed Orientation Programmes in teaching methodology, pedagogy, educational psychology etc., for all new entrants at the level of lecturers;

(b) To organise Refresher Courses for serving teachers to cover every teacher atleast once in 5 years;

(c) To organize Orientation Programmes by using internal resources of university and by bringing a number of colleges together; and

(d) To encourage teachers' participation in Seminars/Symposiums, etc.

Objectives of Academic Staff Orientation Refresher Courses

Broad objectives of Academic Staff Courses are stated as follows:

(a) To enable teachers to understand the significance of education in general and higher education in particular in the global and national context and to help them understand the role of a college/university teacher in the national goal of achieving a secular and egalitarian society.

(b) To make them understand the linkage between education, economic and socio-cultural development with particular reference to socio-political structure of the Indian Society.

(c) To make them aware of the developments in their specific subjects and help them acquire and improve basic skills of teaching at college/university level.

(d) To enable teachers to understand the organization and management of a college/university and to help them perceive the role of a teacher in the total system. The programme also aims at enabling teachers to utilize opportunities for development of personality, initiative and creativity.

Academic Staff College at Banaras Hindu University

Within the framework of National Education Policy and broad objectives envisaged above, the Academic Staff College (ASC) at Banaras Hindu University (BHU) under phase I of the programme organises Orientation Courses for university and college teachers with teaching experience of not more than 8 years. The first Orientation Course under this phase of the programme was inaugurated by Professor R.P. Rastogi Vice-Chanceller, Banaras Hindu University on December 21, 1987. Phase II of the programme was started with the inauguration of the First Refresher Course in 'Hindi' for serving teachers of colleges and university on January 23, 1989, followed by similar Refresher Courses in Law, and Mathematics in 1988-89. In 1989-90 financial year University Grants Commission gave additional responsibility of conducting two more Refresher Courses in the field of 'Journalism' and 'Home Science', which is a mark of recognition of the efficient functioning of the ASC at BHU. For Refresher Courses programme a lecturer is expected to have atleast 5 years of teaching experience. How-

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* *Information and Public Relations Officer, Banaras Hindu University, Varanasi-221 005.*

ever, there is no upper limit regarding the length of teaching experience at present. Since then, these two programmes (Orientation Programme and Refresher Programme) are continuing systematically and regularly, taking into account the catchment area allotted by UGC and 10-15% allotment on all India basis.

Mechanics of Programme Formulation

For each Orientation Course, an effective curriculum is developed under overall guidelines suggested by UGC. The curriculum comprises four components which we call four modules. Module I, discusses the socio-cultural dimension of higher education. Component B or Module 2 deals mainly with teaching methodology and teaching technology and practical training is imparted in the use of mechanical and electronic gadgets. Component C or Module 3 is devoted to personality development and institutional management. Component D or Module 4 focusses on new developments in the concerned discipline/disciplines and recent trends in Research and Development. Special emphasis is laid to include topics like Futurology, Man and Environment, Data Processing and Analysis, Economic Planning, Computer Application and Practice, Scientific Temper, Science Policy, Group Dynamics and Role of Administration and Students Union etc.

Under phase II of Refresher Programme generally two senior faculty members of the concerned department/departments are associated as Course Coordinators for the duration of the course. The theme chosen is relevant and useful for participants. Eminent persons in the discipline are invited as resource persons from all over the country. Special care is taken to maintain an all India character in this respect.

So far the college has conducted 9 Orientation Courses and 7 Refresher Courses. Seminar presentation and discussions are an integral part of both the programmes. The courses are constantly updated on the basis of feedback received from participants of each batch. By and large the participants have found the content of the courses highly relevant. The college has developed a great demand from Kashmir to Kerala and from Assam to Rajasthan and Gujarat.

Achievements

In its short span of life the college has made significant achievements. Constant feedback from participants, self evaluation by college and critical observations, comments and suggestions from the resource persons have helped the college achieve a place of distinction among the rest of the Academic Staff Colleges functioning in the country. The college has been able to develop a highly relevant curricula for the Orientation Programme and Refresher Courses. By providing a regular forum for the teachers to come together and discuss common problems related to society, teacher, student, university and college, the ASC has contributed to the emergence of an intellectual community on the campus of BHU. A sense of fellow feeling has been generated among the four institutions of Varanasi i.e., Banaras Hindu University, Kashi Vidyapeeth, Sampurnanand Sanskrit University and Tibetan Institute of Higher Studies. Contact with eminent teachers in the Academic Staff College, awareness of their wider role in the society, motivation to improve their teaching/learning strategies and inter-disciplinary academic exchanges have contributed to the enlargement of horizon of teachers and has induced qualitative changes in their self-role conception. Academic Staff College tries to make teachers acquainted with the latest instructional aids and methodology of teaching. Many of the teachers, specially from colleges, are exposed to the seminars and discussions for the first time.

Another Dimension

In its efforts to constantly update its academic standards and make itself more useful in the task of educational improvement the dimensions of ASC are changing fast. There are several areas of academic advancement in different disciplines of the University wherein advance level of research and experiments are going on. Besides organising Orientation and Refresher Courses, ASC has also been organising one day and half-a-day workshops in the frontier areas of science, technology and humanities in recent months. Workshops on 'Super-conductivity', Non-conventional Energy', and 'Role of Growth Centres in the Economic Development of Eastern UP' have been successfully organized in collaboration with various concerned departments and experts of the university.

Programmes for 1990-1991

The tentative schedule of the Orientation and Refresher Courses at Banaras Hindu University Academic Staff College for 1990-1991 is as follows:

Programme	*Catchment Area*
—BHU's short-term Programmes	(Varanasi & around)
—**Orientation Course** (in Humanities, Social Sciences, Law and Commerce, etc.)	—do—
—**Orientation Course** (in Science Streams)	—do—
—**Refresher Courses** in Hindi	(North & Central Zone)
—**Refresher Course** in **Journalism**	—do—
—**Refresher Course** in Tibetan Language	
—**Refresher Course** in Home Science	(East Zone)
—**Refresher Course** in Mathematics	(East Zone)
—**Refresher Course in Environmental Awareness** (need based course)	

BITS Silver Jubilee Celebrations

We are pleased to publish the full text of the Address of the President of India, Shri R. Venkataraman, delivered on the occasion of the Silver Jubilee of Birla Institute of Technology and Science at Pilani on September 9, 1990.

It gives me great pleasure to participate in the Silver Jubilee Celebrations of the Birla Institute of Technology and Science, Pilani. I would, at the outset, like to convey my thanks to Sri Krishna Kumar Birla, Chairman of the Institute and to Sri Venkateswaran, Director of the Institute, for their kind invitation to me. I extend my felicitations to all those associated with the Institute—students, faculty, staff and alumni—on the occasion of the Silver Jubilee. As the Birla Institute of Technology and Science crosses its Silver Jubilee year, it is becoming something of an exemplar in the matter of higher and technical education.

This is not my first visit to the Institute. I recall coming here in February 1984 when I had an opportunity to go round the campus and see some of your remarkable activities. I was most impressed by the freshness of the Institute's scholastic environment. I found the students, faculty and staff alert, dynamic and pulsating with activities and keen to maintain the highest standards of excellence. I am glad to find that six years later, the Institute has the same fresh and creative atmosphere and the students are as committed to the pursuit of academic distinction as before.

One thing that particularly attracted me about the Institute then and does so even today is its open-minded and receptive approach to the preparation of curricula. While preparing the students for the final degrees, this Institute tries to provide curricular options in keeping with the preferences and natural inclinations of the students. I have been advocating for over two decades that students should not be tied down to a rigid combination of subjects but should be free to choose as in USA for example, any combination of subjects like engineering, economics, psychology etc. as they wish. I am happy that this institution has already adopted the new system. I have no doubt that the Institute's spirit of innovation in the field of educational development, will bear rich fruit.

My thoughts turn today to the memory of the renowned industrialist, educationist and distinguished son of India, the late Sri Ghanshyamdas Birla. Sri G.D. Birla was, essentially, a visionary. Even prior to the attainment of Independence, he had perceived the need for educating and training the youth of our nation. As a consequence, he founded and sustained several educational and training institutions all over the country. Over the years, a steady stream of doctors, scientists, technologists and graduates in social sciences has emerged from these institutions, making signal contributions to the progress of our country. I would like to join all of you today in paying a tribute to Ghanshyamdasji's memory and to his vision and initiative, philanthropy and wisdom, which have provided much-needed stimulus to free India's journey towards prosperity.

This journey has been challenging and arduous. But nonetheless the journey has been a steady march forward. On an occasion like this, it is but natural for us to pause, look back and see the nature of the terrain which we have traversed.

As you are aware, India missed the industrial revolution. The British Taj kept us, consciously and cynically, outside the pale of that major event. The reasons are not far to seek. Our political masters wanted to keep India a perennial market for their industrial products. To industrialize India, would have been to unleash our creative potential and turn us into a formidable competitor. And so we were deliberately supressed, industrially, technologically, no less than politically. Even for food, India was woefully dependent. Famines attacked us with a clock-like regularity and we were condemnded to import rice from Burma, wheat from Europe and cotton from Egypt.

The Congress leadership more particularly Jawaharlal Nehru was aware of the magnitude of the effort that lay ahead. And so even prior to Independence, Jawaharlalji conceived the idea of planning as a strategy for the rapid development of free India.

After the transfer of power, we turned our attention, very consciously, towards transforming a stagnant India into a modern vibrant society. The use of progressively sophisticated models and methodologies of Planning as the vehicle for economic development and the enlisting of science and technology in the process vouchsafed the socio-economic transformation of our country. True, this could not be an overnight or magical transformation. But it was clear that the old order of dependence and backwardness had ended. Nehru was steadfast in his belief that the applications of science and technology, more than anything else, would not only galvanise economic activity but bring about dramatic social change.

In this process, the role of institutions imparting scientific and technical training became pivotal. Nehru laid the foundation for a large number of institutions of scientific study, both pure and applied. The National Laboratories, the Indian Institute of Technology and Regional Engineering Colleges dotting the whole country bloomed in a great efflorescense and encouraged an unprecedented expansion of educational and research activities.

This process has acquired an irreversible momentum of its own. From a position wherein we had only a handful of Universities, we have now developed more than 150 institutes of higher learning and over 100 centres of research in physical, natural, engineering, medical, social, human and earth sciences. From a position of dependence for scientific expertise on others, we have now reached a situation where we have a reservoir of over 3 million scientists and technologists and rank third in the world in the volume of such personnel. Even year some 10,000 scientists, engineers and doctors go abroad—to the United States, U.K., and Europe where they have become vital components of their infrastructure.

The 'scientific temper' that Nehru used to speak of so often has permeated several departments of national activity. We have succeeded in effecting change wherever we have set our mind to do so. During the forty years since India achieved Independence our country has taken gigantic strides forward in almost every sphere of national endeavour. The achievement of self-sufficiency in food production, establishment of a network of heavy industries—steel, machine tools, fertilizers, prime movers, petro-chemicals, the discovery and tapping of our oil and gas resources, the break-through in our space and ocean exploration programmes and the spectacular expansion of our electronics industry, are all accomplishments of which we can justly be proud.

Among these, our success in agriculture has been particularly impressive. Our foodgrains output has, since independence, more than trebled and the spectre of famine which plagued our economy before 1947, has been eliminated from our midst. The position with regard to commercial crops is similarly heartening. We had lost major cotton plantations and lands to Pakistan at the time of Partition. But cotton production in India has subsequently developed not only to the point of self-sufficiency but to a position where we can occasionally export. We had lost jute lands to East Pakistan at the time of Partition. But the West Bengal farmer has now taken our annual jute production to very high levels. Similarly, in sugarcane, our need for refined and traditional sugar is continuously rising but is also being continuously met by our production. Our success in agricultural production has evoked the admiration of many developing and even developed countries.

If I have somewhat laboured this point it is to show that the Indian farmer is as progressive and innovative as any other and that the change that Indian agriculturists are traditional archaic and backward looking has been totally disproved.

Our strides in the agricultural and industrial sectors have manifested themselves in changes in the pattern of our international trade. Prior to 1947, simple consumer goods like safety pins, soaps and tooth paste were being imported, not to mention intermediates and machine goods. We have now developed a strong and diversified industrial base covering not only consumer goods and intermediate goods, but also basic goods such as steel, fertilisers, chemicals and capital goods like machinery and equipment. The rate of our industrial growth over the last four decades, has been an impressive 5%. While our imports are now limited to certain basic raw materials, our exports consist of a variety of manufactured products of various kinds including machinery and engineering goods. Even in some advanced areas like Defence, we have been able to match our technology with the best available in the world.

Such successes however should come more frequently and in more areas. This can be achieved only through our young researchers and students resisting the temptation of soft options. Modern technology computers, satellites and audio-visual appliances—are making knowledge accessible to men and women everywhere with amazing width and speed. What we require is the ability and will to harness the latest developments to the needs of the nation and keep abreast of the times.

Science and technology have to be harnessed to human development. We must apply them to everyday problems which of course is more difficult than learning a few facts and principles and repeating them in an examination. We must overcome this easy option and adapt what we have learnt at the Universities to improve the quality of life. Only then can we satisfactorily overcome malnutrition, illiteracy and economic backwardness. Why should we not, for instance, apply satellite transmission and communication to expand adult literacy. Why should we not use water management technologies to provide drinking water to all our villages? Why should we not utilise the super abundant solar energy for irrigation, industry and a host of other uses? There is no limit to the possibilities of invention and adaptation of science for human welfare. Youth should aspire to become Faradays, Edisons and Marconis and so on. They must rebel against the status quo and meek acceptance of existing conditions.

We have not yet got out of colonial attitudes of mind. We imagine that all our problems can be solved by importing technological solutions. The habit of looking for assistance from abroad has not left us. Constant and continuous import of technology impedes our scientific development. Import of the latest technology is unavoidable since it is a waste of time, money and energy to rediscover known developments in the world. However, it is important to acquire current technology and make innovations and adaptations so that we may not be obliged to import every later development on the imported technology.

Post-war Japan offers the best example of a country which acquired technology from developed countries, made innovations thereon and even sold them to the very countries from which they had originally acquired the technology.

India does not lack the scientific talent to emulate Japan but it does lack the backing from the industry. Unless industry projects its problems to the institutions carrying on research, the latter will have to operate in a vacuum. Greater interaction between industry and research is, therefore, called for in the interest of not only of these two branches but of the economic development of the country.

Unfortunately the linkage between our universities and technological institutions on the one hand and our industry on the other is woefully inadequate. Having lived in a sheltered sellers' market, without either internal or external competition, the urge to cut costs, improve productivity and quality was missing in our entrepreneurs. Consequently, the painstaking work in our universities and laboratories has remained largely dormant, not finding application in the production of goods and services. The phenomenon has also led to a sense of frustration among research scientists who feel the results of their research are ignored by Industry. Industry, it must be admitted, has done little by way of promoting In-House research and development activities. The massive investments we have made in research laboratories and higher technical institutions will be wasted unless industry refers its problems to them for solution and interacts with them. I am however happy to learn that this institute has striven to break the vicious circle through its consultancy services and constant interface with the industry. This should be easily possible in an Institute run by the foremost industrial house in India with their vast and varied enterprises ranging from traditional textiles and sugar to sophisticated chemicals, fertilisers, engineering and electronics.

Business Houses like the Birlas and Tatas have been pioneers in the then risky areas of industrial ventures; put India on the industrial map of the world; they were in a sense the innovators of their day.

It therefore gives me particular pleasure to inaugurate the Centre for Research on Education, Innovation and Institutional Development. I am glad that the University Grants Commission has assisted the Institute in setting up this Centre. I am sure the new Centre being inaugurated today will encourage creativity and innovation, while promoting research on education management and administrative processes. The setting up of this Centre shows that the Institute is not complacent about its activities and wishes to continuously improve its own record and performance through self-analysis and, wherever necessary, self-correction. I am sure the Centre will motivate the students to delve deep into the limitless area of science and technology.

Saint Tiruvalluvar said:

தொட்டனைத் தூறும்
மணற்கேணி மாந்தர்க்குக்
கற்றனைத் தூறும் அறிவு

Dug deep the sandy well
Gushing waters do ever swell
Even so from study flows
Human wisdom that ever grows.

Nature does not yield its secrets easily. It has to be tamed as a shrew and not worshipped like Juliet.

Mr. Chairman, I am very happy to hear from you about the high quality of education imparted by your Institute. This confirms the impression that I have carried about the Institute. It is gratifying that BITS has introduced the semester system, the mode of internal evaluation and has restructured its educational programmes so as to make them more enriched, interdisciplinary and flexible. The Practice School Programmes of BITS are an imaginative feature to forge linkages between the professional world and the educational world. The Institute's Research and Consultancy services make research relevant to the national development and social needs.

May I once again say what a joy it has given me to be with all of you in the Silver Jubilee Celebrations of this Institute. I have no doubt that the Institute will continue to grow in strength and popularity. I wish you all good luck and success.

Excerpts from the Welcome Address by Shri K.K. Birla, Chairman, BITS

We all know, Mr. President, that promotion of education, to render it an effective vehicle for the socio-economic and cultural resurgence of our beloved motherland, has always received your best attention and foremost priority. In our own humble way, we at BITS have been striving to forge ahead along the path of innovation in higher education. Our prime consideration has been to prepare young men and women to act as leaders for the promotion of the economic and industrial development of the country. We believe our efforts are in consonance with the role of education as visualised by the nation's leaders, which is to transform a somewhat static society into a vibrant one with a commitment to development and progress. We feel proud when we find that students who have passed from our Institute have made a name for themselves and occupy high positions in various walks of life. Our students have done well not only for themselves but have also spread the name and fame of BITS throughout the country—even outside India.

In Pilani, the seed of educational enterprise was sown by my great-grandfather in 1901 in the form of a primary school to impart elementary knowledge of Hindi and Arithmetic to his grand-children—my father Ghanshyam Das Birla and my uncle Rameshwar Das Birla. When my father grew up it was his dream to create an institution of international repute which would foster the scientific temper. Father was a visionary. Nineteen sixty-three was the centenary year of the House of Birlas. Father thought that the best way to celebrate it was to announce his desire to form an institution dedicated to technology and science. Accordingly, in 1964, the then existing colleges of BET were amalgamated to constitute the Institute which is today known as the BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE. It has been recognised as a deemed university under the UGC Act.

We believe that the unique and distinctive education imparted here has a message for the nation. What we offer is a judicious and happy blend of knowledge of science, technology and humanities, tempered and mellowed with a sense of moral values.

Mr. President, we at BITS with all humility and modesty feel that a gift of BITS to the world of education is the introduction of the Practice School method of teaching. As a result of the Practice School scheme, students learn the theory part at the campus and its practical side in industrial locations. This has proved to be very popular with the students and has also been commended, much to our satisfaction, by the Education Ministry of the Government of India. Industry too has welcomed it. Fortysix industrial units are lending us their valued support in imparting practical training to our students under the scheme of Practice School. You will be glad to hear, Mr. President, that an organisation in the United States too has offered its cooperation in this direction and in fact three students have already left for the States this year under this scheme.

We are celebrating the year 1990 as the Silver Jubilee year and today's function is one of rejoicing over our achieving adulthood. The activities started at the beginning of this century have culminated in the formation of an Institute which is now preparing itself to meet the challenges of the 21st century.

Mr. President, I believe that however excellent an organisation, there is always room for improvement. At BITS too we cannot sit back and feel complacent; we have to continue marching ahead. These celebrations are milestones to help us take stock of what we have achieved and remind ourselves of the tasks that lie ahead. ☐

Educational Process at BITS

[Speech by Dr. S. Venkateswaran, Director, BITS]

On this historic day, as the Director of this Institute, it is my proud privilege to describe the educational process at BITS which is the culmination of the achievements of this Institute during its existence as a university over the past 25 years. It is not an easy task to narrate in detail in a short time our entire educational system with all its complexities and flexibilities. I will, therefore, touch upon only certain salient points which give this Institute its special character and a distinct identity.

Eversince its inception as a university, the Institute has successfully implemented all the important educational reforms suggested from time to time by, say, the Radhakrishnan Commission, the Kothari Commission, various reports of the Estimate Committee of the Lok Sabha, binational conference, UGC reports, the National Education Policy of 1986, etc.

Some of these include the reform of the examination system, flexible admission process for multi-point entry, restructuring of the educational curriculum into an integrated educational structure, semester system, modular system of education by which the total knowledge required in the subjects is broken into small modules of courses, institutionalized linkages with the world of work through our Practice

School programme, ME Collaborative programme, Distance Learning programme, and Research and Consultancy directions which make research relevant to national development and social needs.

The Institute operates education at three levels namely, the Integrated First Degree programmes, Higher Degree programmes and Doctoral programmes. All programmes in the Institute have been designed to allow as much component of modern and allied sciences as is necessary for a graduate to function effectively and efficiently in today's technological society. All these programmes have certain structural commonality and common courses are invariably operated together, irrespective of the students who take these courses and the ultimate degree programme that a student may be pursuing. A large factor of commonality of courses among all students creates the educational basis which provides an easy professional linkage, communication, and group activity among students graduating in different disciplines. Further this enables us to conduct a unique dual degree programme through which a student can study simultaneously for two degrees.

We have adopted an educational philosophy, the basic tenets of which are that education is for the refinement of intellectual and emotional faculties for achieving economic advantage and furthering national development. We have an educational process by which we mould self-reliant men and women out of young students who enter the system. We asked ourselves the question: "If medical education requires an internship before graduation, why not other branches of education?" The result was the Practice School system that we have evolved by which we have forged institutional linkages with a large number of industries and developmental organizations all over the country, and recently in the United States of America. At any time of the year, 270 students and 30 faculty are distributed all over India and this number rises to 800 students and 80 faculty during summer. As there is a Political map of India, a Physical map of India etc., there is also a BITS Practice School map of India. We hope that the national atlas will one day carry this map.

We have an examination system in which the teacher is the supreme authority and we have created mutual trust between students and teachers. We have developed an instruction-pattern in which the departments have lost their relevance. The teaching of same courses by faculty belonging to several disciplines have become a way of life in BITS. We have an educational system by which students are given several electives, open-ended project oriented courses etc.—thereby providing an opportunity to a student by which he can choose to optimize his career objectives.

The Institute has devised an admission process by which it admits all students based only on academic performance in their board examination. Today the Institute attracts the best talent in India. This year alone first rank students from seven large boards from various parts of India have joined the Institute. We have students and staff from all parts of India. This Institute is in some sense a miniature India.

We attract premier organisations for campus interviews. More than 70 organisations visit the Institute for recruitment of graduating students in all subjects and in both the semesters. This is because we admit students in both the semesters, and they graduate in both the semesters; in fact, almost all of our students get jobs even before they graduate.

Recently we have started special type of linkage with CSIR laboratories as well as various industries in terms of human resource development. We have introduced Distance Learning programmes in science and technology areas as a continuing education for employed persons. We have around 500 students, distributed in more than 150 organizations, undergoing this programmes.

Today we have been recognized as one of the reputed Institute which has created a viable model worth looking into. It is in the fitness of things that, when we planned the Silver Jubilee celebrations, we approached the UGC to grant us a "Centre for Research on Educational Innovation and Institutional Development" to mark this occasion. The UGC granted our request and our Revered President is going to inaugurate the Centre. This Centre will not only be a nerve centre of the Institute in terms of ideas, creativity and innovation but also will be a forum for visiting researchers and educationists in terms of promoting innovation in education.

We have asked for this Centre because we feel we have done a lot of significant innovative work in the field of higher education. We, therefore, want to start this Centre with the experience that we have already gained. Hence this Centre is also going to be inaugurated with bringing out its first publication "An Improbable Achievement—BITS—A Profile of Change" which actually narrates and documents all the achievements of the Institute during the past 25 years which our Respected President is going to release.

Since January 1990, we have organised several functions such as Drama Week, Music Week, Academic Week, Dance Recitals, etc. and all these have been brought out in a pictorial brochure which will also be released by the President.

Sir, we know that 25 years in the life of a University is not a big span of time. We are also aware that we cannot allow a sense of complacency setting in at this stage inducing a feeling as though we have reached the goal and we can now rest on our laurels. The process of innovation is like riding a tiger from which one cannot get off. The very success opens up new challenges and new opportunities and the task never ends. □

Genetic Disorders Project for Punjab

The Central Government is reported to have approved an ambitious Rs. 4.6 crore project for setting up a "centre for genetic disorders" in Punjab with national infrastructural facility. To be established under the aegis of the Department of Biotechnology, the proposed centre will have two campuses attached with Guru Nanak Dev University at Amritsar and the Post-Graduate Institute of Medical Education and Research at Chandigarh.

The project envisages the creation of highly specialised services for the diagnosis, counselling and research on genetic disorders with a view to developing a nucleous facility for the north-west region of the country. It will be fully aided—financially as well as technically—by the Ministry of Science and Technology.

This will be the first institute of its kind in the northern region and second in the country after the one set up in Hyderabad. The campuses of the centre will function in close collaboration with the Department of Human Biology and Human Genetics in the University, Department of Human Biology and Human Genetics Department of Paediatrics, PGI, with Dr. Jai Rup Singh and Dr. B.N.S. Walia, heads of the two departments, respectively, as their coordinators.

The major emphasis of the Amritsar centre, according to Dr. Jai Rup Singh will be on research, while that of the Chandigarh centre on clinical diagnostics. Both campuses will be made operative within the next three months by strengthening the existing services available at the two institutions.

Enumerating the main objectives of the centre, Dr. Jai Rup Singh said, it will provide prenatal and post-natal diagnosis of genetic disorders as well as undertake screening for specific genetic diseases. it will also offer pre-marital and post-marital genetic counselling and undertake research for the identification of genetic markets. The centre will also initiate training programmes in the fields of clinical genetics and molecular genetics, Dr. Singh added.

The development of advanced facilities, installation of latest equipment and recruitment of technical manpower at the two campuses will be undertaken in a phased manner in the next two years. For this purpose both campuses will have an equal outlay of the total budget—Rs. 2.3 crore each.

According to Dr. Jai Rup Singh the Amritsar campus will have its feeding from the State of Jammu and Kashmir and a part of Punjab and western parts of Punjab, thus covering four medical colleges. The Chandigarh campus will cater to the population of remaining Punjab, Chandigarh, Himachal Pradesh and Haryana.

He said that the research facilities of the centre will be directed towards the applied aspects and these would be supplementing the clinical work to be carried out at the two campuses so as to ensure immediate utilisation of the findings for genetical health care.

Cochin University Instrumentation Centre Upgraded

The University Grants Commission (UGC) has upgraded the University Science Instrumentation Centre (USIC) of the Cochin University of Science and Technology. As part of this the UGC has sanctioned a grant of Rs. 18 lakhs for equipping the USIC with several sophisticated and modern instruments and gadgets for its mechanical, electronic and glass blowing sections. In addition assistance have been sanctioned for a number of senior level technical and other staff positions. UGC will also make available financial assistance for providing additional building.

With the upgradation from level II to level III, the USIC is entitled to equip teaching laboratories also for postgraduate diploma courses in related fields. Presently the USIC mainly serves the various teaching and research departments of the University as a common facility for repair, installation and fabrication of sophisticated equipment and gadgetry.

Indian Science Congress 1991

The 78th Session of the Indian Science Congress will be held at Indore under the auspices of the Devi Ahilya Vishwavidyalaya from January 3 to 8, 1991. Professor D.K. Sinha, Sir Rash Behary Ghose Professor of Applied Mathematics & Co-ordinator, Centre for Atmospheric Sciences, University of Calcutta will preside.

The Focal Theme of the Session will be "Coping with Natural Disasters.: An Integrated Approach". The rationale for choosing this theme is that: Natural disasters, over the centuries, have taken a toll of lives and properties that have exceeded far what humanity could grapple with them as well as to alleviate and lessen miseries.

International perspectives are to be set forth through few presentations, specially by few international organisations, associations and groups that are actively involved in and seized of, what are being envisaged under International Decade for Natural Disaster Reduction (IDNDR) as declared by UN. The Indian Scenario and the state-of-the-art will obviously figure in such deliberations, which will facilitate in arriving at recommendations on action-oriented programmes for the decade 1990-99.

Further details are available from : The General Secretary, Indian Science Congress Association, 14, Dr. Biresh Guha Street, Calcutta 700 017.

Recognition for CUSAT Physics Deptt.

The University Grants Commission (UGC) has selected the Physics Department of the Cochin University of Science and Technology for 'special assistance' as an upgradation of the Department Research Support earlier sanctioned to it. As part of this the UGC has sanctioned Rs. 36.5 lakhs. This includes grant for sophisticated equipment like X-Ray Diffraction unit, computers and new staff positions.

During the next 5 years the Department has to concentrate on studies relating to development of laser sources and in crystal growths for optical studies and material processing applications. Other thrust areas include: mechanism of laser oblation, properties of thin films and high resolution spectroscopy.

The programme of "Special Assistance" is intended to raise the quality of teaching/research in selected departments in the country that do commendable work and have potential for further development. The primary aim of the scheme is to "encourage pursuit of excellence".

AVRC in Punjabi University

The Punjabi University, Patiala, has been allotted an Audio Visual Research Centre (AVRC) by the UGC to produce educational video films for the Countrywide Classroom Programme for national network of Doordarshan. This is the first centre in Punjab, Haryana and Himachal Pradesh and 14th in the country.

The UGC has granted Rs. 24 lakh for furnishings, electrical fittings and air conditioning etc. and Rs. 33 lakh for purchase of equipments.

According to Mr. Kulwant Madan, Director, Planning and Monitoring of the University, who is also the Director of the AVRC, the centre is supposed to produce about 30 programmes in a year for Doordarshan.

News from Agril. Varsities

Dairy Farming and Diversification of Agriculture

Dr. Khem Singh Gill, Vice-Chancellor of the Punjab Agricultural University while addressing the meeting of the Punjab Dairy Farmers' Association said that after the success of the Green Revolution, it was high time to develop dairy farming on scientific lines as a part of diversification of agriculture. He stressed that dairy farmers should keep high-yielding animals alongwith balanced feeding, production of good quality green fodder, cheap and economic dairy cattle housing and efficient health cover. Dr. Gill urged the dairy farmers to produce fodder seed on their own farms for which the university would supply basic seed. He called upon the farm engineers to develop suitable machinery for the harvesting of fodder crops and design modern dairy farms.

The Vice-Chancellor also released the first copy of the quarterly 'Dairy Sandesh' which has been published by the Department of Animal Science for the benefit of dairy farmers of the State.

Dr. M.S. Tiwana, Head of the Department of Animal Science in his welcome address, highlighted the importance of dairy farming.

Dr. S.S. Gill, Additional Director of Research (Veterinary and Animal Science) emphasized that unemployed rural youth should take-up dairy farming as a profession.

News from UGC

Commonwealth Fellowships and Scholarships 1991-92

The University Grants Commission has invited nominations of suitable teachers from Universities/Colleges for the award of Commonwealth Academic Staff Fellowships and Scholarships for the year 1991-92.

The Commonwealth Academic Staff Fellowships tenable for one academic year are intended to help the teachers working in the universities and affiliated colleges to enhance their qualifications and experience in the universities or similar institutions in the United Kingdom. The Scholarships are, normally for two academic years to enable the awardee to complete the Ph.D. Though no special areas of study have been prescribed for this purpose, medicine and surgery have been excluded as these have been separately covered under Commonwealth Medical Awards.

As the number of fellowships and scholarships is limited the Universities have been advised to nominate not more than four teachers from each university and its affiliated colleges. The last date for the receipt of nomination in the prescribed proforma by the University Grants Commission is **31st October, 1990.**

Interested teachers may contact the University concerned for further details.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to the AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A list of Research Scholars registered for doctoral degrees in Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Anup Kumar. *Convection and superposed fluid instabilities.* HP. Dr. R.C. Sharma, Department of Mathematics, Himachal Pradesh University, Shimla.

2. Bhardwaj, Vijay Kumar. *Stabilities in fluids and plasmas.* HP. Dr. R.C. Sharma, Department of Mathematics, Himachal Pradesh University, Shimla.

3. Sharma, Narayan Datt. *Some flow and instability problems.* HP. Dr. R.C. Sharma, Department of Mathematics, Himachal Pradesh University, Shimla.

4. Veena Kumari. *Newtonian and viscoelastic fluid instabilities.* HP. R.C. Sharma, Department of Mathematics, Himachal Pradesh University, Shimla.

Statistics

1. Chettiyar, N. Viswanathan. *Estimation of parameters of location scale family distributions.* Kerala. Dr. Jacob Sundara Raja, Department of Statistics, University of Kerala, Kariavattom.

Physics

1. Jain, Santosh Kumar. *Studies of a proposed novel optical fibre.* H.S. Gaur. Dr. R.A. Singh, Department of Physics, Dr. Hari Singh Gaur Vishwavidyalaya, Sagar.

2. Khandelwal, Omprakash. *Integrated geophysical and geohydrological studies for exploration, assessment and management of groundwater resources in Tenad River Basin, Barwani Khargone District, Madhya Pradesh, India.* Devi Ahilya. Dr. M.R. Bharti, Prof., Holkar Science College, Indore and Dr. C.P. Gupta, Deputy Director, National Geophysical Research Institute, Hyderabad.

3. Pathak, Arti. *Laser Raman and infrared studies of some organic molecules.* H.S. Gaur. Dr. R.A. Singh, Department of Physics, Dr. Hari Singh Gaur Vishwavidyalaya, Sagar.

Chemistry

1. Bhagavathy, V. *Pre-concentration and determination of trace amounts of neodymium and samarium.* Kerala. Dr. T. Prasad Rao, Scientist, Regional Research Laboratory, Pappanamcode, Trivandrum.

2. Bhatnagar, Mamta. *Chromatographic analysis of organic compounds using charge transfer complexation and fluorescence techniques.* Devi Ahilya. Dr. Padma Jain, Asstt. Prof., Govt. Girls Post-Graduate College, Indore.

3. Jain, Anamika Chandralekha. *Synthesis fluorescence characteristics, biological activity and analytical chemistry of oxazoles and related compounds.* Devi Ahilya. Dr. Padma Jain, Asstt. Prof., Govt. Girls Post-Graduate College, Indore.

4. Jain, Pramod Kumar. *Lipophilization, extraction and transportation of-alkali and alkaline earth cation model studies to understand transport across cell membrane: A synopsis*. Devi Ahilya. Dr. N.S. Poonia, Prof. and Head, Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

5. Lalan, Vineeta. *Structural studies of titanium vanadium and platinum with Schiff's*. Devi Ahilya. Dr. K.K. Chaturvedi, Prof. and Head, Department of Chemistry, Holkar Science College, Indore.

6. Lonkar, Sunita V. *Studies in histochromatography of lipids in plant and animal tissues*. Devi Ahilya. Dr. Padma Jain, Asstt. Prof., Govt. Girls Post-Graduate College, Indore.

7. Sharma, Ram Behari. *Molecular orbital calculations for complexes of heavier transition element: Comparison of bonding in Os-NO, Os-NS, Os-CO, Os-NOH and Os-N bonds*. Devi Ahilya. Dr. K.K. Pandey, Prof., School of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

8. Shukla, Savita. *Interactive studies of alkali and alkaline earth benzoates in polar and non polar media*. Devi Ahilya. Dr. N.S. Poonia, Prof. and Head, Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

9. Tripathi, Brajesh Kumar. *Determination of some metals after separation of their complexed with naphthalene*. Devi Ahilya. Dr. Ashok Kumar, Reader, Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

10. Verma, Neeta. *Chemical studies of epoxies and their uses as anti-corrosive coatings*. Devi Ahilya. Dr. S.L. Garg, Prof. and Head, Govt. Girls Post-Graduate College, Indore.

Earth Sciences

1. Krishnakumar, N. *Geological and geo-chemical studies of secondary gold occurrences of Nilambar Valley*. Kerala. Dr. P.T. Roy Chacko, Lecturer, Department of Geology, University of Kerala, Kariavattom.

Engineering & Technology

1. Bhaskar, Data Ram. *Controllable signal processing/signal generation circuits*. Delhi. Dr. Raj Senani, Head, Department of Electronics Communication Engineering, Delhi College of Engineering, Delhi.

BIOLOGICAL SCIENCES

Biology

1. Anila Kumary, K.S. *Comparative meiofaunal community structure of a marine and estuarine biotype in the context of pollution*. Kerala. Dr. P.K. Abdul Aziz, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

2. Ebanasar, J. *Studies on some aspects of the aquacultural traits of the members of the family channidae*. Kerala. Dr. V. Jayaprakas, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

3. Jayasree, K.V. *Biology of paratelphusa hydrodromus*. Kerala. Dr. G. Saraswathy Ammal, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

4. Jayasree, R. *Studies on the fishes of Veli Lake with special reference to their Biology*. Kerala. Dr. H. Suriyanarayanan, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

5. Joshua, Neena Suzzan. *Screening, isolation and characterization of bioactive compounds from marine organisms*. Kerala. Dr. K. Padma Kumar, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

6. Maya Devi, K.S. *Studies on carangid fishes of the South-West Coast of India*. Kerala. Dr. V. Jayaprakas, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

7. Nair, Sreeja G. *Comparative studies on the effect of certain pollutants on physiological process of certain fishes*. Kerala. Dr. H. Suriyanarayanan, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

8. Thara, S. *Studies on the alimentary canal of certain selected teleosts with special reference to the Hepatic caeca and its physiology*. Kerala. Dr. G. Saraswathy Ammal, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

9. Vasudevan, Kiron. *Studies on some aspects of the culture of tilapias*. Kerala. Dr. V. Jayaprakas, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

Biochemistry

1. Yadav, Poonam. *Antioxygenic defense potential in alloxan induced diabetes*. Devi Ahilya. Dr. D. Bhatnagar, Asstt. Prof., Department of Biochemistry, Devi Ahilya Vishwavidyalaya, Indore.

Botany

1. Jain, Sangeeta Tambhane. *Studies on the phytoplankton in some aquatic bodies of Indore with special reference to fish feeding*. Devi Ahilya. Prof. S.R. Upadhyay, Prof. and Head, Department of Botany, Govt. Girls Post Graduate College, Indore and Dr. N.K. Dhakad, Prof. and Head, Department of Zoology, Govt. Girls Post Graduate College, Indore.

2. Tiwari, Nirlesh. *The flora of Dhar District (M.P.) with special reference to ethno botany*. Devi Ahilya. Dr. C.M. Solanki, Prof., Department of Botany, P.M.B. Gujarati Science College, Indore.

Zoology

1. Jain, Kavita. *Studies on heavy metals accumulation in certain tissue of fishes due to industrial effluents in Khan River and their effect on fish growth*. Devi Ahilya. Dr. N.K. Dhakad, Prof. and Head, Department of Zoology, Govt. Girls Post-Graduate College, Indore.

2. Parwar, Rita. *Gas chromatographic studies on cell bioconcentration potential of various body tissues of Channa punctatus to BHC and its metabolites*. Devi Ahilya. Dr. Rampal Singh, Prof. and Head, Department of Zoology, Holkar Science College, Indore.

3. Sharma, Meenakshi. *Studies on the Bioconcentration potential of various body tissues of Channa Punctatus to DDT (DDE and DDD) by gas-chromatographic estimation*. Devi Ahilya. Dr. Ashok Sharma, Asstt. Prof., Department of Zoology, Holkar Science College, Indore.

Medical Sciences

1. Aliar, N.M. *Toxicologic evaluation of food additives and*

contaminants. Kerala. Dr. K.K. Vijayan, Department of Pharmacology, Medical College, Thiruvananthapuram.

2. Bhand, Shishir S. *Bio equivalence studies of some dosage formulations of some drugs.* Devi Ahilya. Dr. S.C. Chaturvedi, Prof. and Head, Dean Faculty of Technology, Devi Ahilya Vishwavidyalaya, Indore.

3. Sharma, Rajendra Kumar. *Synthesis and antimicrobial activity of some substituted 1-9-anilino acridines.* Devi Ahilya. Dr. S.C. Chaturvedi, Prof. and Head, Dean, Department of Pharmacy, Devi Ahilya Vishwavidyalaya, Indore.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Dewan Muslim Ali. *On certain separation and connectedness concepts in fuzzy topology.* BHU. Dr. A.K. Srivastava, Reader, Department of Mathematics, Banaras Hindu University, Varanasi.

2. Gandhi, B. Krishna. *On certain isomorphisms between groups of arithmetic functions.* Osmania.

3. Ghosh, Susmita. *Seismic waves in a medium under rigid boundary.* ISM. Prof. S. Dey, Department of Applied Science, Indian School of Mines, Dhanbad and Dr. (Miss) Nandeta Roy, Ranchi University, Ranchi.

4. Khadekar, Goverdhan Sakharam. *Bimetric theory of relativity.* Nagpur. Dr. T.M. Karade, Department of Mathematics, Nagpur University, Nagpur.

5. Kundu, Prabir Kumar. *On some water wave problems and associated mathematical methods.* Calcutta.

6. Singh, Ram Karan. *Some properties of a cone in different spaces.* Magadh.

7. Trivedi, G.S. *A study in the theory of approximation by ultra spherical series.* Vikram. Dr. B.V. Vyahar, Lecturer, Department of Mathematics, Vikram University, Ujjain.

Statistics

1. Dubey, Vyas. *Modified estimators using auxiliary information.* BHU. Dr. B.N. Pandey, Reader, Department of Statistics, Banaras Hindu University, Varanasi.

2. Sahu, Dilip Kumar. *Estimation of probability density and study of some related large sample properties.* Calcutta.

3. Singh, Sanjay Kumar. *Some contributions in life testing and reliability models.* BHU. Dr. Umesh Singh, Reader, Department of Statistics, Banaras Hindu University, Varanasi.

Physics

1. Annapoorni, Subramanian. *Magnetic and electrical behaviour of certain hydrogenated alloys of rare earth-transition metals.* IIT Madras.

2. Balasubramanian, G. *Electron scattering from molecular beam as a tool to estimate rate of evaporation.* Madurai.

3. Balasubramanian, N. *Studies on evaporated indium tin oxide (ITO) films and the junctions of ITO/Si and ITO GaAs.* IIT Madras.

4. Basu, Tapasranjan. *Some theoretical studies on the mesophases of thermotropic liquid crystals.* Calcutta.

5. Bhattacharyya, Sailajananda. *Study of emission of fast particles in energetic nuclear collisions.* Calcutta.

6. Bopardikar, Dattaram Kamalakar. *Study of relationship between transition temperature (Tc), atomic displacement (Az), spontaneous strain (S), and spontaneous polarization (Ps) in displacive ferroelectrics.* Nagpur. Dr. K. Singh, Department of Physics, Nagpur University, Nagpur.

7. Flower, Little. *The study of inner Bremsstrahlung.* Calicut. Dr. B.R.S. Babu, Department of Physics, University of Calicut, Calicut.

8. Ganesh, V. *Crystal structure analysis of some organic and inorganic compounds.* IIT Madras.

9. Gopalakrishna Sarma, Rani Venkata. *Transport studies on amorphous silver solid electrolytes: Application to solid state battery.* IIT Madras.

10. Guchhait, Ramkumar. *Nuclear structure studies in the odd protein transitional nuclei in the* $A=150$ *region.* Calcutta.

11. Harikrishnan, K.P. *Onset and characterisation of chaos in a two dimensional nonlinear deterministic model.* CUST. Dr. V.M. Nandakumaran, Reader, Department of Physics, Cochin University of Science and Technology, Cochin.

12. Kasiviswanathan, S. *Studies on amorphous* $CuInTe_2$ *thin films.* IIT Madras.

13. Kishan Kumar, V.S. *Thermoluminescence and other optical studies on impurity doped alkali sulphates.* IIT, Madras.

14. Kokode, Namdeo Shriram. *Additive coloration in microcrystalline powders of potassium halides.* Nagpur. Prof. B.T. Deshmukh, Department of Physics, Nagpur University, Nagpur.

15. Krishnamurthy, C.V. *A model for ionic solid solutions: Calculation of phase diagram and thermodynamic properties.* IIT Madras.

16. Mandal, Abanimohan. *Study of orbital electron capture probabilities in some second forbidden transitions.* Calcutta.

17. Mohan Rao, Ayyagari Venkata. *Nucleon and complex particle emission from excited light and heavy nuclei.* BHU. Prof. J. Rama Rao, Department of Physics, Banaras Hindu University, Varanasi.

18. Mukherjee, Surjit. *Study of excitation functions of alpha particle induced reactions and pre-equilibrium analysis.* BHU. Prof. J. Rama Rao, Department of Physics, Banaras Hindu University, Varanasi.

19. Murali, K.R. *Electronic processes in colored crystals of NaCl and NaF.* IIT Madras.

20. Murthy, K.V.R. *Thermally stimulated luminescence of natural zeolites: Deccan traps of Western India.* Baroda.

21. Nayak, Sadhana. *Charge storage and transport studies in pure and iodine-doped polystyrene thermoelectrets.* Durgawati. Dr. S.C. Dutt, Prof. and Head, Department of Physics, Rani Durgawati Vishwavidyalaya, Jabalpur.

22. Raman, R. *Physico-chemical studies on lithium-zinc ferrites for microwave applications.* IIT Madras.

23. Ramesh, N. *Electro optic effect in alkali halides and the role of impurities.* IIT Madras.

24. Sainath Prasad, P. Sathya. *Preparation characterisation and transport studies on some amorphous solid electrolytes for solid state batteries.* IIT Madras.

25. Sanjeev Kumar. *The study of thermodynamic and transport properties in dilute magnetic alloys with CEF split impurities in the presence of magnetic field.* HP.

26. Santram. *A study on some aspects of renewable sources of energy with special reference to wood, bio-gas and solar.* D.Sc. Vikram.

27. Sarmah, Kanak Chandra. *Experimental studies on some photoelectronic properties of cadmium telluride thin films.* Gauhati. Dr. Hiralal Das, Reader, Department of Physics, Gauhati University, Guwahati.

28. Sridhar, R. *Studies on thickness dependence of density of states distribution in a Si:H thin film.* IIT Madras.

29. Thomas, Boben. *Formation and characterisation of indium selenide thin films by elemental evaporation.* CUST. Dr. M.G. Krishna Pillai, Director, George Sudarshan Centre for Physics and Computer Science, CMS College, Kottayam.

30. Upadhyay, Hariom. *Study of dayside venus ionosphere.* BHU. Prof. R.N. Singh.

Chemistry

1. Ahi, Anita. *Studies on radical polymerization.* Durgawati. Dr. U.D.N. Bajpai, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur.

2. Bandyopadhyay, Jayasri. *Chemical constituents of Argemone mexicana and other medicinal plants.* Calcutta.

3. Bansal, Darshana. *Studies in heterocyclic compounds of biological interest.* BHU. Dr. Ram Lakhan.

4. Bhatti, Balwinder Singh. *Phytochemical studies of Randia tetrasperma, Asparagus racemosus 'wild' and synthesis of some pheromones.* HP.

5. Chaudhuri, Joyanta. *Photochemistry of anthraquinone and phenanthraquinone in different solvents.* Calcutta.

6. Daryani, Ali Asghar Sarabi. *Some studies on electrodeposition of nickel from organic solvents.* BHU. Dr. V.B. Singh, Lecturer, Department of Chemistry, Banaras Hindu University, Varanasi.

7. Das, Prabir Kumar. *Kinetics and mechanism of formation and dissociation of iron (III)–hydroxamate complexes.* Calcutta.

8. Deshmukh, Lata Madhusudan. *Thin layer chromatographic studies of toxic heavy metal ions present in environmental samples.* Nagpur. Dr. R.B. Kharat, Department of Chemistry, Institute of Science, Nagpur.

9. Devapiriam, D. *Applicability of linear free energy relationships to organic substrates—Naphthalene derivatives.* Madurai.

10. Dutta, Gopal. *Chemical investigation of naturally occurring carbocyclic ring compounds: Isolation, structure elucidation, transformation and partial synthesis of triterpenes.* NBU.

11. Hasan, Syed Hadi. *Studies on the structure, extraction and industrial applications of metallo-organic compounds of IV group elements.* BHU. Dr. D.C. Rupainwar, Prof., Department of Applied Chemistry, Institute of Technology, Banaras Hindu University, Varanasi.

12. Joshi, H.D. *Studies on chemistry of natural and synthetic drugs.* Saurashtra. Dr. A.J. Baxi, Reader, Department of Chemistry, Saurashtra University, Rajkot.

13. Khadabadi, Somashekhar Sanganabasappa. *Synthetic studies in sydnomes of pharmacological interest.* Karnatak. Dr. G.S. Puranin, Prof. and Chairman, Department of Studies in Chemistry, Karnatak University, Dharwad.

14. Laly, S. *Studies on structure, stability and analytical applications of transition metal complexes of thiosemicarbazones and semicarbazones.* Calicut. Dr. Geetha Parameswaran, Department of Chemistry, University of Calicut, Calicut.

15. Lokeswara Reddy, Gopa. *Redox analytical aspects of some quinones.* Andhra.

16. Mandeep Singh. *Electrochemical, viscosity and kinetic studies of some electrolytes in mixed solvents.* Panjab.

17. Misra, Keshav Chandra. *An investigation of the synthesis of tricalcium silicate (Alite) cement.* Dibrugarh. Dr. P.C. Barthakur, Regional Research Laboratory, Jorhat.

18. Mohammed Iqbal Ahmed. *Synthesis and chemical studies of modified steroids.* Osmania.

19. Nagar, Vibha. *Kinetic studies in the mechanism of oxidation of some amino acids by chloramine-T in the presence of surfactants.* Vikram. Dr. V.R. Shastri, Head, Department of Chemistry, Vikram University, Ujjain.

20. Nageswara Rao, Isukapatla. *Geochemical studies of organic matter in the eutrophic Visakhapatnam Harbour, Bay of Bangal.* Andhra.

21. Nimdeokar, Ira Nilkanth. *The absorption and fluorescence spectra of coumarin dyes in solution.* Nagpur. Dr. M.V. Kaulgud, Department of Physical Chemistry, Nagpur University, Nagpur.

22. Omana, M.J. *Physico-chemical and catalytic properties of 12-tungstophosphoric acid and its salts.* IIT Madras.

23. Padmaja, S. *Generation, characterization and reactions of the borate radical—A new transient species.* IIT Madras.

24. Patel, Bhaskarbhai Vithalbhai. *Kinetic study for the polymerization of P-N-acryloylaminobenzoic acid.* Patel. Dr. R.M. Patel, Reader, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar and Dr. B.P. Suthar, Reader, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

25. Patel, Gajendrakumar Chhotabhai. *Chelating resins and their metal chelates.* Patel. Dr. Mohanbhai M. Patel, Prof., Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

26. Patil, Bharati Hanumanth. *Anion exchange selectivity in mixed solvent systems: 2-methoxy ethanol water.* Karnatak. Dr. C.S. Narke, Reader, Department of Chemistry, Karnatak University, Dharwad.

27. Rama Krishnan, K. Hari. *Chemical investigation of Indian plants and related synthetic experiments: Chemistry of isoflavonoid natural products and a synthetic search for related physiologically active structures.* Madurai.

28. Sachidanand, Bhakt. *Studies in dynamics or organic nitrogen in an entisol.* Durgawati. Dr. D.D. Mishra, Prof. and Head, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur and Dr. J.N. Dubey, Asstt. Prof. Department of Soil Science, Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur.

29. Sampath, Sangeetha. *Studies in structural and electrical properties of some spinel type complex metal oxide systems.* Nagpur. Dr. M.P. Tare, Department of Chemistry, Institute of Science, Nagpur.

30. Sankarapapavinasam, S. *Studies on some aspects of the corrosion and its inhibition of Pb-Sb alloy, Pb, Cu and Al in agressive media and the electrodeposition of Zn-Ni alloy from chloride bath.* Bangalore. Dr. F. Pushpanaden, Department of Chemistry, Central College, Bangalore and Dr. Mohammed Farooq Ahmed, Department of Chemistry, Central College, Bangalore.

31. Sastry, Mandalika S. *Ion exchange in inorganic separations using azo dyes as complexing agents.* BHU. Dr. Animesh K. Ghosh.

32. Sattar, Mohammad Abdus. *Synthetic studies in terpenoids and related compounds.* Panjab.

33. Seshi Reddy, P. *Studies on the formation of metal complexes derived from some substituted benzimidazoles.* Osmania

34. Sharma, Abani Kumar. *Studies of the reaction pathway of products obtained from attempted electrophilic substitution of indole with aryl diazenium ions.* Gauhati. Dr. P.K. Sarma, Prof., Department of Chemistry, Gauhati University, Guwahati.

35. Sivasubramanian, G. *Studies on polymerization: Structural characterization and thermal degradation of hexolic anhydride based polyesters.* Madurai.

36. Syed Azim, S. *Electrochemical studies on the synergistic action of metal corrosion inhibitors.* Madurai.

37. Syngal, Meenakshi, *Excess thermodynamic functions of solutions of n-butyl ether and iso-propyl ether.* Panjab.

38. Thenraja, Dr. *Kinetic and mechanistic studies in oxidation of organic compounds.* Madurai.

39. Tiwari, Rajesh Kumar. *Studies on oxidation of some sulphydryl compounds.* Durgawati. Dr. K.K. Mishra, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur.

40. Tripathi, Shailendra. *Stereochemistry of the coordination compounds of some metal (II) and uranyl salts with a few nitrogen and oxygen donor ligands.* BHU. Prof. I.S. Ahuja, Department of Chemistry, Banaras Hindu University, Varanasi.

41. Ullagaddi, Ashok. *Studies on heterocyclic compounds of biological interest.* Gulbarga. Dr. M.G. Purohit, Reader, Department of Chemistry, Gulbarga University, Gulbarga.

42. Veluchamy, A. *Electrochemical aspects of tin metal.* Madurai.

Geology

1. Mukherjee, Saumitra. *Geology and Geochemistry of pegmatites and associated rocks of Jorasemar and Sapahitola area, District Hazaribagh, Bihar, with special reference to applications of remote sensing techniques in exploration of natural resources.* BHU. Dr. Arup Deb, Reader, Department of Geology, Banaras Hindu University, Varanasi.

2. Patel, Satishbhai Jaychandbhai. *Study of trace fossils in carbonate rocks of Western Kutch, Gujarat State.* Baroda.

3. Pathak, Deo Brat. *The Kimmeridgian—Tithonian at Ler Katrol. Kachchh, India: Ammonoid systematics, biochronology and biogeography.* BHU. Dr. Jai Krishna.

4. Subba Rao, P.B.V. *Building a model for the precambrain crystal growth of the Singhbhum—Orissa iron ore craton on the basis of the gravity data.* ISM. Prof. R.K. Verma, Indian School of Mines, Dhanbad.

Engineering & Technology

1. Baburaj, V. *Optimum design of multi-layered fibre composite stiffened plates.* IIT Madras.

2. Chaubey, Sanjay. *Studies on stable and metastable phases in monotectic systems.* BHU. Prof. R. Ramachandra Rao.

3. Dalal, Jagadish Ch. *Studies of chemical modification of cellulose and starch.* Calcutta.

4. Durga Prasad, Chadalapaka. *Studies on electrical properties of oxide perovskites:* $M_{1-x}\ La_x\ Ti_{1-x}\ CO_x\ O_3$ *(M=Pb, Ba, Sr and Ca).* BHU. Dr. Om Prakash.

5. Jagadesh Kumar, M. *High voltage biopolar transistor device modelling including the collector region recombination and the emitter region heavy doping effects.* IIT Madras.

6. Jayabalan, P. *Behaviour of non-uniformly compressed thin unstiffened elements.* IIT Madras.

7. Joardar, Asok. *Electron microscopy of isothermally transformed low-low carbon steels and of CrMoV rotor steels subjected to long service exposure and low cycle fatigue.* BHU. Prof. D.S. Sharma, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

8. Krishna Kumar, R. *Finite element analysis of transient and steady state dynamic fracture in a viscoplastic material.* IIT Madras.

9. Lakshmipathi, R. *Electrostatic field computation in multidielectric configurations and investigations of spacer characteristics of gas insulated systems subjected to pulsating direct voltages.* IIT Madras.

10. Neelamani, S. *Dynamic pressures on large vertical cylinders due to regular and random waves.* IIT Madras.

11. Raghunatha Rao, B. *Studies on the corrosion behaviour of some austenitic stainless steel weld metals.* IIT Madras.

12. Ramesh Babu, N. *Investigation on laser dressing of grinding wheels.* IIT Madras.

13. Satyanarayana Reddy, Ramireddy. *Studies on rotating heat pipe and its application to cooling of electrical machines.* IIT Madras.

14. Seetharaman, S. *Linear stochastic response of offshore guyed towers under combined loading.* IIT Madras.

15. Sharma, Lalit Kumar. *Sintering of mullite and mullite forming* $Al_2O_3-SiO_2$ *mixtures in presence of minor additives.* BHU. Dr. G.N. Agrawal, Reader, Department of Ceramic Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

16. Thilakam, R. Krishna. *Design, flow control and simulation of a high speed broadband integrated network.* IIT Madras.

MINISTRY OF HUMAN RESOURCE DEVELOPMENT
(DEPARTMENT OF EDUCATION)

NORWEGIAN GOVERNMENT FELLOWSHIPS—1991-92

Applications are invited on plain paper from Indian Nationals for the award of unspecified number of Fellowships offered by the Norwegian Government for the following subject-fields:

1. Professional Shipping: (Duration 8 months beginning in August, 1991).
Admission requirements: Candidates should have Master's degree in Economics/Business Administration or related fields with 3 years practical experience in shipping.

2. Pulp and Paper Technology: (Duration 10 months starting in August/September, 1991).
Admission requirements: Candidates should have a M.Sc. degree in Chemistry or B.Sc. degree in Chemical Engineering or B.E. Paper & Pulp with 4 years practical experience from Pulp & Paper Industry or University Diploma in Pulp & Paper with 6 years experience. The course is intended for **Young plant operating engineers** in Pulp & Paper Mills (not conversion plants) and **not for senior personnel or academic staff.**

3. Hydropower Development: (Duration 10 months, starting August/September, 1991).
Admission requirements: Candidates should have B.Sc. degree in Civil Engineering with 5 years practical experience in planning design or construction of hydraulic works.

4. Electric Power Distribution System: (Duration 10 months starting in August/September, 1991).
Admission requirements: Candidates should have B.Sc. degree in Electrical Engineering with 5 years experience relevent to the course programme. The course is primarily intended for **young professional Engineers and not for senior personnel or academic staff.**

5. Petroleum Exploration and Production: (Duration 10 months starting August/September, 1991).
Admission requirements: Candidates should have Master's Degree in Geophysics or Geology and atleast 4 years practical experience or B.E. in Mining or Petroleum Engineering and atleast 5 years practical experience in this field.

6. Port and Coastal Engineering: (Duration 10 months, starting in August/September, 1991).
Admission requirements: Candidates should have Bachelors degree in Civil/Harbour/Coastal or Ocean Engineering with atleast 5 years practical experience.

7. Management of Natural Resource and Substainable Agriculture: (Duration 10-20 months, starting in Aug., 1991).
Admission requirements: Candidates should have Master's degree in Agriculture with 3 years professional experience in management and resource planning or teaching in relevant fields.
II Value: Adequate maintenance allowance will be paid to cover food, rent and ordinary living expenses. The fellowships cover passage both ways by the Donor country.
III Age Required as on 1.8.1991: Candidates snould be between 28-35 years for Professional Shipping and between 25-33 years for All the remaining fields. The upper age limit will be relaxed upto 2 years in the case of Scheduled Caste/Scheduled Tribe Candidates.
NOTE: (i) Only candidates with 60% marks and above at the minimum qualifying level are eligible. Candidates having 60% marks at M.Phil. or pre-Ph.D. Courses but having less than 60% marks at the minimum qualifying level will not be considered. Where grades are mentioned candidates must indicate the conversion formula adopted by the University/Institution. (ii) The following must be attached with the application: (a) Attested copies of all degrees/diplomas/certificates etc., (b) Attested copy of the certificate certifying date of birth. (c) Candidates belonging to SC/ST must attach a copy of certificate to this effect. (d) Attested copies of marks sheets of the qualifying examination. (iii) Candidates should have adequate good knowledge of English. (iv) Candidates with equivalent foreign degree will also be considered. (v) Candidates should have sufficient knowledge of India and the donor country. (vi) Candidates must furnish a clear and precise programme of study/research in Norway. (vii) Applications in the subject fields other than those specified above will not be considered. (viii) Candidates who have already been abroad for study/specialisation training on a scholarship are eligible to apply only if they have been in India for at least three consecutive years after their return from abroad. However scholars under the scheme of scholarships for study abroad have to complete 5 years stay in India on their return from abroad. (ix) Applications of candidates who are at present abroad will not be considered. (x) No correspondence will be entertained with candidates not selected for interview/fellowship. (xi) Experience will be counted upto the last date prescribed for submission of the completed application form. (xii) Candidates should apply for the above fellowship on a plain paper with a recent passport size photograph, furnishing the details/particulars indicated in the accompanying format to **the Under Secretary, Ministry of Human Resource Development (Department of Education), External Scholarships Division, E.S.5 Section, Room No. 517, "B" Wing, Shastri Bhawan, New Delhi-110 001** by **15th October, 1990.**

FORMAT OF APPLICATION
FOR
NORWEGIAN GOVERNMENT SCHOLARSHIPS—1991-92

1. Name of the candidate (in Block Letters)
2. Subject for which applying
3. (a) Mailing Address
   (b) Permanent Address

Affix a recent passport
size photograph

4. Date of Birth and the State to which the candidate belongs.
5. Whether a member of SC/ST or a tribal or aboriginal community if so, give full particulars.
6. Academic record starting from High School/Higher Secondary:

Name of the Board/University/ Institution	Exam (s) Passed	Year of Passing	Class/Division with position if any*	Percentage of marks obtained and position if any	Subjects taken

* (In case no Division/Class is awarded and only grading is done, the conversion formula adopted may be mentioned. Please attach attested/photostat copies of academic record alongwith your application).

7. Nature of the present employment with date of appointment, designation and the name and address of the employers.
8. (a) Whether application is sponsored or not?
   (b) Whether No Objection Certificate attached or not?
9. Have you been abroad, if so, give full particulars of the country and the period. Also mention the year or return to India.
10. Proposed programme of study/research/training specifying: (i) The work at present engaged in; (ii) future plans/prospects after the proposed studies/research; (iii) nature and programme of study/research desired; (iv) how are these related to the technical or economic development of India.
11. Any other information.

Note: Employed persons must send their applications fully sponsored by their employers. However, advance applications complete in all respects will not be considered till the sponsorship by the employers concerned. Applications must be sent to the **Under Secretary, Department of Education (E.S.5. Section), Room No. 517-B Wing, Shastri Bhavan, New Delhi-110 001** by **15th October, 1990.**

Place: (Full Signature of Candidate)
Date:

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CLASSIFIED ADVERTISEMENTS

NATIONAL INSTITUTE OF IMMUNOLOGY

SHAHID JEET SINGH MARG
NEW DELHI-67

(AN AUTONOMOUS RESEARCH ORGANISATION FUNDED BY DEPARTMENT OF BIOTECHNOLOGY, GOVT. OF INDIA)

The Institute invites applications from highly motivated, creative and productive persons for the following posts for the Product Development Cell. Post at Sl. No. 1 & 2 can be offered in any one of the following pay scales depending on qualifications and experience.

(a) Rs. 2200-75-2800-EB-100-4000/- (T.E. at the minimum of the Scale Rs. 3586/-)

(b) Rs. 3000-100-3500-125-4500/- (T.E. at the minimum of the Scale Rs. 4840/-)

(c) Rs. 3700-125-4700-150-5000/- (T.E. at the minimum of the Scale Rs. 5930/-)

1. Name of the Post: Asstt. Manager/Deputy Manager/Manager depending on the scale in which candidate is selected.

Qualification & Experience: M. Pharm/ M.Sc. in Pharmacy/Chemical Engineering preferably with Ph.D: and having industrial experience as a Product Development Officer.

A number of immunodiagnostic methods utilizing modern immunological and molecular biology approaches are under development which require product development and process engineering for pilot plant scale manufacture. The Institute has set up a Product Development Cell to develop formulations and packaging for immunodiagnostics and immunotherapeutics, standardization and quality control of products. The Institute is looking for highly motivated, competent and result oriented personnel for this cell.

2. Name of post: **Staff Scientist II/Staff Scientist III/Staff Scientists IV** depending on the scale in which the candidate is selected.

To develop biosensor based devices for antigen antibody reaction and next generation of Immunodiagnostic kits.

Qualifications: M.Sc. or Ph.D. in Chemistry or Electrochemistry with research or technical experience in development of BIOSENSORS for diagnostic applications. Knowledge of electronics is desirable.

OR

B. Tech in Electrical/Electronics Engineering with specialization in development and applications of biosensors for diagnostic purposes.

3. Name of the Post: **Staff Scientist II**

Scale of Pay: Rs. 2200-75-2800-EB-100-4000/-

Qualifications & Experience: M. Pharma with working exposure in the field of Product Development in R & D Centre of an Industry. Preference will be given to persons having 2-3 years experience in Controlled Drug delivery System.

Nature of Job: To develop formulations and packaging for immunodiagnostics and immunotherapeutics.

Note:

1. The appointment for Post No. 1 will be initially on contract basis for a period of five years, with probation period of one year. Further continuation of appointment will depend on performance during this period of 5 years. Posts at Sl. No. 2 & 3 are in projects and are tenable for the duration of the project. Appointment will be made initially on contract for five years or till duration of the project, whichever is earlier.

2. The pay, allowances etc. are admissible as per Central Govt. norms. Other benefits include CPF, Medical Reimbursement, LTC, Bonus etc., as per rules of the Institute.

3. Applicants for posts No. 1 & 2 should clearly indicate the scale of pay in which they wish to be considered. Higher start in the given scale may be given to deserving candidates. Possibility also exists for taking a candidate on deputation.

4. Qualification/Experience may be relaxed at the discretion of the Institute.

5. Person working in Govt./Public Sector/Autonomous Bodies should apply through proper channel or produce "No Objection Certificate" at the time of interview.

6. Candidates should indicate name and addresses of three referees in responsible position who can comment on their suitability for the post.

7. Application on a plain paper, with complete details of qualification, experience indicating names of Organizations served, with period, salary drawn, copies of testimonials should be sent to the Administrative Officer **within 10 days** from the publication of this advertisement. Application must be accompanied with crossed Postal Order of Rs. 10/- drawn in favour of the Institute. SC/ST candidates are exempt from payment of application fee. However such candidates should clearly mention the category they belong to.

8. In case of non-availability of candidates with requisite expertise, the posts may be filled up in lower grade at the discretion of Institute.

9. Outstation candidates called for interview may be paid single second class railway fare to and fro by the shortest route.

Late and Incomplete applications will not be considered.

ASSAM AGRICULTURAL UNIVERSITY

JORHAT

Advertisement No. 5/1990.

Applications are invited in prescribed application forms for the following posts in the disciplines as mentioned:

1. Posts in the rank of Professor: (Pay scale Rs. 4500-7300) **Discipline:** Animal Production & Management.

2. Posts in the rank of Associate Professor: (Pay scale Rs. 3700-5700) Discipline: Agronomy; Plant Breeding & Genetics; Soil Science; Plant Pathology; Horticulture; Entomology; Crop Physiology; Nematology; Home Science (open); Plantation Crop; Animal Husbandary; Animal Production & Management; Clothing & Textile.

3. Posts in the rank of Assistant Professor (Pay scale Rs. 2200-4000) Disciplines: Agronomy; Plant Breeding & Genetics; Soil Science; Plant Pathology; Horticulture; Entomology; Extension Education (Agri); Crop Physiology; Home Science (open); Bio-Chemistry & Agril. Chemistry; Agril. Engg.; Nematology; Agril. Bio-technology, Extn. Education (Vety); Vety. Pathology; Anatomy & Histology; Pharmacology; Animal Nutrition; Animal Genetics & Breeding; Fisheries Management; Physical Education; Extn. Education (Fisheries).

All posts carry allowances as admissible under the University rules.

Prescribed application forms and other details regarding qualifications, experience etc. required for the posts may be had by sending self-addressed stamped envelope of the size of 23 × 10 c.m. from the undersigned. **The last date of receiving applications complete in all respect is 16th Oct. 1990. The applications of employed candidates must come through proper channel within the last date. Incomplete applications and applications received after expiry of the last date shall not be entertained.**

L. Dutta
REGISTRAR

THE UNIVERSITY OF JODHPUR
(Establishment Section)

No. JDR/U/ESTT/9609 Dated: Sept. 6, 1990.

ADVERTISEMENT NO. 79/90-91

Applications are invited in the prescribed form obtainable from the Office of Registrar, University of Jodhpur, Jodhpur on payment of Rs. 10/- either in Cash or through Crossed Indian Postal Order payable to the Registrar for the following posts so as to reach latest by 16-10-1990, alongwith a self-addressed envelope of 27 × 12 cms. size bearing postal stamps worth Rs. 8/-. Applications received after the due date shall not be entertained.

1. PROFESSOR: One post
(Plan–Temporary)
Scale of Pay: Rs. 4500-150-5700-200-7500.
(Under Madhusudan Ojha Special Research Cell, Department of Sanskrit).

2. ASSOCIATE PROFESSOR: One post
(Plan–Temporary)
Scale of Pay: Rs. 3700-125-4950-150-5700.
(Under Madhusudan Ojha Special Research Cell, Deptt. of Sanskrit).

3. ASSISTANT PROFESSOR: One Post
(Plan–Temporary)
Scale of Pay: Rs. 2200-75-2800-100-4000.
(Under Madhusudan Ojha Special Research Cell, Deptt. of Sanskrit).

4. SENIOR SCIENTIFIC OFFICER–U.S.I.C.: One Post (Permanent)
Scale of Pay: Rs. 3000-100-3500-125-4500.

5. DEPUTY REGISTRAR: One Post (Temporary)
(Reserved for SC candidate)
Scale of Pay: Rs. 3000-100-3500-125-4500.

6. ASSISTANT REGISTRAR: Two Posts (Permanent)
(One reserved for SC and one for ST candidate)
Scale of Pay: Rs. 2200-75-2800-100-4000.

NOTE: Qualifications and other details will be supplied alongwith the application form.

Harphool Singh
REGISTRAR

NATIONAL INSTITUTE OF EDUCATIONAL PLANNING AND ADMINISTRATION

17-B, Sri Aurobindo Marg,
New Delhi-16.

Applications are invited for the following posts in the Unesco sponsored Project entitled "Use of Sample Survey Techniques in Educational Statistics". One Project Associate Fellow and two Project Assistants. The posts are for a period of one year and may be extended by another two years.

Project Associate Fellow – One (Consolidated Salary ranging between Rs. 2800-3100/ p.m.)

Essential

1. Should have consistently good academic record with first or high second class Master's degree in Economics/Statistics/Mathematics/Psychology of an Indian University or an equivalent degree of a foreign university, with specialisation in quantitative techniques, and
2. A doctorate degree of an **Indian** or foreign University.

Desirable

1. Field experience of generating data by survey techniques.
2. Experience of working in the **quantitative** techniques and its application in social sciences.

Age Limit: 35 years.

Project Assistants – Two (Consolidated Salary ranging between Rs. 2200-2500/- p.m.)

Essential

1. At least second class Master's degree in Economic/Statistics/Mathematics/ Psychology with quantitative techniques as area of specialisation.

Desirable

1. Field experience of generating data by survey techniques.
2. Experience of working in the quantitative techniques and the application in social sciences.
3. Ph.D/M.Phil degree based on the use of quantitative techniques and/or psychology with specialisation in quantitative techniques.

Age Limit: Below 30 years.

Qualifications and age are relaxable for otherwise well qualified candidates. Candidates from outside Delhi called for interview will be paid single return train second class fare by shortest route. Candidate already in employment in Government/Semi-Government Department/Autonomous bodies should send their applications through proper channel. Other things being equal, preference will be given to SC/ST candidates.

Applications may be submitted by **8th October, 1990** on plain paper to the Registrar, NIEPA.

University of Oxford

Rhodes Scholarships India 1991-93

Applications are invited from Indian nationals for four Scholarships to be awarded under the terms of the Rhodes Trust, Oxford, England. The annual value of each Scholarship is £ 5322. The Scholarships, tenable for two to three years, are for a course of studies leading to a degree at the University of Oxford. Candidates must hold a First class Honours degree in pure or applied sciences, humanities, law or medicine, and apart from academic distinction, indicate evidence of active interest and achievement in sports, theatre or community service. They must be between the ages of 19 and 25 on **October 1, 1991**. Particulars of the Scheme together with the application forms, may be obtained by sending self-addressed, Rs. 1.50 stamped envelope (5" × 10") to Secretary, Rhodes Scholarships (India), St. Stephen's College, Delhi-110007.

Government of India

Ministry of Human Resource Development

(Department of Education)

Applications are invited for the two Scholarship Schemes described below. Please note that, though these are two distinct Schemes, candidates may apply either for one or if eligible for both. Candidates applying under both schemes should submit their applications for each of the schemes separately.

A. COMMONWEALTH SCHOLARSHIPS AND FELLOWSHIPS FOR 1991-92.

I. Applications are invited from Indian nationals in the format given below for the award of Commonwealth Scholarships tenable from October, 1991 for higher studies/research/training in the subject mentioned below in the United Kingdom (75 nominations), Canada (46 nominations). Hongkong (3 nominations) and Nigeria (2 nominations).

II. **VALUE:** Scholarships cover tourist-class air passage (both ways), fees, adequate maintenance and other allowances.

III. AGE: Candidates should not be above 34 years of age on 30.9.90. Preference will, however, be given to candidates who are below the age of 30 years. The upper age limit is relaxable by two years in the case of SC/ST candidates. (for all the Countries).

(a) MEDICINE (FOR UK ONLY) Cancer Research (including Cancer epidemiology) Cardiology; Gynaecology and Neurosurgery.

(b) ENGINEERING & TECHNOLOGY: Computer Studies including Information Technology, Word Processing, Data Processing and Micro-Electronics Applications, Electronics, Environmental Sciences and Engineering. Ocean Engineering, Paper Technology, Remote Sensing Technology, Communication Engineering including Satellite Communication, Optical Fibre Communication & Digital Communication, Bio-Technology/Biochemical Engineering, Instrumentation/Process Controls related to Petro-Chemicals including Micro Processor Technology; Robotics-very Large scale Integration/Artificial Intelligence and Quality/Reliability Engineering.

(c) SCIENCE (PURE AND APPLIED): Biochemistry, Computer Science, Mathematics, Molecular Biology, Microbiology and Physics (Solid State/Plasma).

(d) AGRICULTURE AND ALLIED FIELDS: Animal Husbandry, Agronomy, Food Technology and Horticulture.

(e) HUMANITIES AND SOCIAL SCIENCES: Anthropology (Physical/Social); Archaeology, Economics, Education/Pedagogy, English Language & Literature, Fine Arts (including Western Painting, Art History, Graphic Design and Sculpture), History, Library Sciences, Museology, Philosophy, Scientific Conservation, Sociology, Political Science, Mass Communication, Psychology and Forest Economics.

(IV) MINIMUM QUALIFICATIONS AND EXPERIENCE REQUIRED: (a) MEDICINE: MD/MS in the subject field selected should have atleast 60% marks at either Bachelor's or Master's degree level with two years continuous teaching/research or practical experience thereafter on 30.9.90. Scholarships are only for specified project oriented training in higher techniques and methodology. These are not for generalised training or for studies/training leading to a degree or diploma.

(b) ENGINEERING AND TECHNOLOGY: First Class Master's degree in Engineering/Technology in the subject field selected or a related field with two years continuous teaching/research or practical experience thereafter on 30.9.90, except in Paper Technology. **Candidates who have been Science Students and wish to apply under this group, must also have Master's Degree in Engineering/Technology with two years continuous experience.**

QUALIFICATIONS FOR PAPER TECHNOLOGY: Master's degree in Engineering/Master's degree in Chemistry/Bachelor in Engineering (Pulp & Paper)/University Diploma in Pulp & Paper with 2 years/4 years/3 years or 5 years Experience respectively.

(c) SCIENCE (PURE AND APPLIED): First Class Master's Degree in the subject field selected or in a related field with two years continuous teaching/research or practical experience thereafter on 30.9.90.

(d) AGRICULTURE & ALLIED FIELDS: First Class Master's Degree in the subject field selected or in a related field with two years continuous teaching/research or practical experience thereafter on 30.9.90.

(e) HUMANITIES & SOCIAL SCIENCES: First Class Master's degree in the subject field selected or in a related field with two years continuous teaching/research or practical experience thereafter on 30.9.90, subject to the following:-

HUMANITIES & SOCIAL SCIENCES:

(a) ARCHAEOLOGY: the Master's Degree should be in Ancient/Medieval History/Archaeology.

(b) HISTORY: Background in European History is desirable.

(c) MUSEOLOGY: Diploma in Museology is desirable.

(d) SCIENTIFIC CONSERVATION: Master's degree in Chemistry/Bachelors degree in Civil Engineering with chemical/structural/preservation as field of specialisation.

(e) FINE ARTS: Qualification for Fine Arts is 5 years National Diploma in Fine Arts from a recognised Institution/University. Master's degree in Fine Arts. History of Art desirable. Five black and white or coloured slides or prints/photograph may be attached with the application. Experience not essential.

FOR HONGKONG ONLY

SUBJECT FIELDS. Economics, Electronics and Business Administration.

MINIMUM QUALIFICATIONS AND EXPERIENCE REQUIRED. First Class Master's Degree in the subject field with continuous two years teaching/research or practical experience thereafter on **30.9.90.**

FOR NIGERIA ONLY

SUBJECT FIELDS: Forest Economics.

MINIMUM QUALIFICATIONS AND EXPERIENCE REQUIRED: First Class Master's degree in the subject field or related field with continuous two years teaching/research or practical experience thereafter on 30.9.90.

B. "NEHRU CENTENARY BRITISH FELLOWSHIPS/AWARDS SCHEME FOR 1991-92: Applications are invited from Indian nationals in the format given below for the award of 10 scholarships under the NEHRU CENTENARY BRITISH FELLOWSHIPS/AWARDS SCHEME for the year 1991-92. These Scholarships will be offered in the following subject-fields:

(1) International Relations, (2) Media/Communications/Journalism, (3) Chemistry, (4) Earth Sciences, (5) Economics and (6) English Language/Literature.

DURATION OF SCHOLARSHIPS: the duration of the Scholarship is upto three years from 1st October, 1991.

VALUE OF SCHOLARSHIP: Scholarships cover tourist-class air-passage (both ways) fees, adequate maintenance and other allowances.

MINIMUM QUALIFICATIONS: Uniformly good academic record with First Class Master's degree in the subject-field or in a related field.

AGE: Candidates should not be above 34 years of age as on 30.9.90. Preference will however, be given to candidates who are below the e of 30 years. The upper age limit is, however, relaxable by two ars in the case of SC/ST candidates.

LAST DATE FOR THE SUBMISSION OF APPLICATION: pplications alongwith the required documents (Photostat copies of certificates/degrees/diploma have to be attached) should reach the nder Secretary, External Scholarships Division. E-S 4 Section, inistry of Human Resource Development (Department of Education), Room No. 517, 'B' Wing, Shastri Bhavan, New Delhi-110001 atest by **15th Oct., 1990. (15.10.1990).**

. IMPORTANT INSTRUCTIONS: 1. A candidate may apply for ly one subject of his choice. 2. This Ministry generally nominates uble the number of candidates against the number of scholarship fered. The Final selection rests with the donor Government. 3. andidates who have already appeared for interview more than twice hether for one of the Schemes or both) and not finally selected e not eligible to apply. 4. Mere fulfilment of requirements as laid own in the advertisement does not qualify a candidate for interview. terview letters in a particular subject are sent only to a limited mber of candidates after their applications are examined by a election Committee of experts. 5. The name of the scholarship cheme and (in the case of Commonwealth Scholarship) for the ountry or Countries for which the candidate prefers to be considered should be indicated clearly on the top of the application, if e applicant has any preference. Candidates preference will be kept view as far as possible but candidates selected may be nominated any country according to administrative convenience. 6. Applications must be accompanied by attested copies of all the certificates egarding date of birth, diplomas, degrees, marks sheet in respect of ll the examinations passed alongwith Caste Certificate in respect of cheduled Caste and Scheduled Tribes candidates and experience ertificate of employment and one copy of recently taken passport ze photograph with signature (to be pasted on the application orm). 7. Candidates already holding a Ph.D. degree may be considered for Post-Doctoral research in U.K. only. Those who have lready done a Ph.D. in India or abroad will not be considered for ward of a second Ph.D. 8. Equivalent foreign degrees and diplomas re acceptable. 9. Candidates who have already been abroad for tudies/training/specialization either on Scholarship or on their own or a period exceeding six months are eligible to apply if they have een in India for atleast 3 consecutive years after returning from broad. 10. Candidates who are abroad are not eligble to apply. 11. n case of candidates qualifying from Universities/Institutions which o not give class or division, requirements in lieu of 1st class would e 60% marks where grades are awarded, the candidates are required o furnish **exact percentage of marks and indicate the conversion formula.** 12 Candidates will be expected to have some knowledge of ndia and of the donor Country. 13. Candidates who are employed nust apply through their Employers. Candidates belonging to the ll India Services should send their applications through their Cadre ontrolling Authority. 14. Candidates belonging to SC/ST Community must attach a copy of certificate from the competent authority .e. First Class Magistrate (S.D.O. District Magistrate/Collector). 15. or candidates who are doing Ph.D. or M.Phil., after completion of Master's Degree, actual period of research will be taken into consideration as experience (A certificate and progress report to that effect rom the Universities/Institute should be attached, otherwise no redit will be given. 16. While indicating the period of past experience and period of past stay abroad, candidates should mention the specific dates. 17. As these are scholarships offered by Foreign Governments, Governments, the applications should be submitted in English. 18. Applications in subject-fields other than those specified in the advertisement will not be considered. 19. Candidates who do not possess the requisite qualifications need not apply. 20. Candidates must furnish a clear and precise programme of study/research (minimum 300 words). 21. Incomplete applications and applications received late after the stipulated date will not be considered and no correspondence in this regard will be entertained. 22. Documents submitted alongwith the application will not be returned. Hence, candidates are advised to send only attested photo copies of the Certificates etc. 23. Canvassing in any form will disqualify a candidate. 24. In case no interview letter is received by a candidate who has applied in response to our advertisement by 31st December, 1990, it may be presumed that he/she has not been recommended by the Selection Committee for being called for interview. No correspondence in this regard will be entertained. 25. The Selection Committee's decision about candidate for interview or selecting a candidate for nomination will be final. NO REPRESENTATIONS IN THIS REGARD WILL BE ENTERTAINED.

NOTE: BEFORE FILLING UP THE APPLICATION, CANDIDATES ARE ADVISED TO GO THROUGH THE INSTRUCTIONS CAREFULLY.

PROFORMA FOR APPLICATION

1. Name of the Scholarship Scheme:
2. (a) Group:
   (b) Subject:
   (Indicate any one of the subjects
   (given in the advertisement)
3. (i) Name of the candidate
   Shri/Kum./Mrs./Dr........
   (in block letters) with
   full mailing address:
   (ii) Marital Status:
4. Date of birth and the State
   to which the candidate belongs:
   (Certificate regarding proof of age to be attached)

Recent Passport
size Photograph
duly signed and
(Name should be
given in capital
letters) to be
pasted here.
Without photo
application will
be treated
incomplete.

5. Whether a member of SC/ST: If so, give full particulars.
   (Enclose certificate duly signed by
   1st Class Magistrate.
6. Academic record starting from High School/Higher Secondary
   (Attested/Photostat copies of Certificates to be attached).

Name of the University/ Board/ Institution	Examination Passed.	Year of Passing	Division/ Class with Position if any*	%age of marks obtained and position if any.	Subject taken

*In case no division/class is awarded and only grading is done the conversion formula adopted may be mentioned.

7. Details of Professional/Practical Training and Research Experience, specifying the period and number of papers published, previous employment, with name and date of employer, if any.
8. Nature of the present employment with date of appointment, designation and the name & address of the employer.
9. Names, designation and addresses of three referees who are familiar with the work of the scholar:
   NB: Candidates called for interview will have to bring with them the comments of all three referees.
10. Have you been abroad? If so, give full particulars of the Country and the period. Also mention the year & date of return to India:
11. Proposed Programme of Study/Research/Training, specifying:
    (i) the work at present engaged in:
    (ii) nature & programme of study/research/training desired:
    (iii) future plans/prospects after the proposed studies/research/training; and
    (iv) how are these related to the technical or economic development of India.

Place:
Date: SIGNATURE OF THE CANDIDATE

Note: Employed persons may send advance copy of the application complete in all respects alongwith all relevant certificates if they contemplate delay in sendingg applications through proper channel. However, they should ensure that the applications through proper channel should reach this Ministry by the stipulated date

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University News

MONDAY, OCTOBER 1, 1990 Rs. 2.50

MAU Convocation

Prof. Har Swarup Singh, Member (Agriculture), Planning Commission, Government of India, delivering the Convocation Address at the Tenth Convocation of the Marathwada Agricultural University, Parbhani.

CLASSIFIED ADVERTISEMENTS

KARNATAK UNIVERSITY, DHARWAD

No. KU BOA ADVT/90-91/4482. **Dated: 20-9-1990.**

ADVERTISEMENT

Applications (Eight Sets) in the prescribed forms are invited for the below mentioned posts in the Post-graduate Departments and Constituent Colleges of Karnatak University Dharwad & at University Public School, Dharwad, so as to reach the Registrar, Karnatak University, Dharwad on or before **20-10-1990** by Registered post A.D. from duly qualifying candidates of Indian Nationality.

A set of eight (8) prescribed application forms and the Instruction Sheet can be had from the DIRECTOR, PRASARANGA, KARNATAK UNIVERSITY, DHARWAD-3 in person on presentation of cash challan for having credited the amount of Rs. 32/- to the State Bank of India, K.U. Campus, Dharwad, or by post duly sending self-addressed 28 x 12 Cms stamped (Rs. 4/-) cover along with a crossed Bank Demand Draft for Rs. 32/- payable to the Finance Officer, Karnatak University, Dharwad-580 003.

Those candidates, who had submitted their applications earlier in response to this office advertisement dated 13-11-1987, 2-2-1988 & 12-10-1989 should necessarily apply for the following posts.

Details of vacant posts with reservations.

Name of the Depts., & Posts.	No. of posts vacant	Reservation
1	2	3
P.G. DEPARTMENTS DHARWAD		
MUSIC		
Lecturer (Vocal)	1	ST
PSYCHOLOGY	2	1-SC
Lecturer.		1-GROUP-A
CONSTITUENT COLLEGES		
ENGLISH		
Lecturer	1	SC
HINDI		
Lecturer	1	SC
MUSIC		
Lecturer (Sitar)	1	GROUP-B.
Lecturer (Vocal)	1	ST
CRIMINOLOGY		
Lecturer	1	SC
CHEMISTRY		
Lecturer	1	SC
GEOLOGY		
Lecturer	1	SC
STATISTICS		
Lecturer	1	ST
UNIVERSITY PUBLIC SCHOOL DHARWAD		
DRAWING		
Assistant Teacher	1	SC

SCALE OF PAY IN THE POST GRADUATE DEPARTMENTS/CONSTITUENT COLLEGES/UNIVERSITY PUBLIC SCHOOL, DHARWAD

1. Lecturers (P.G. Department):
Rs. 2200-75-2800-100-4000.
2. Lecturers (Constituent Colleges):
Rs. 1900-50-2300-75-2900-90-3350-100-3650.
3. Assistant Teacher in Drawing:
(University Public School).
Rs. 1190-30-1400-40-1800-50-2200.

QUALIFICATIONS

(1) **FOR P.G. DEPARTMENTS:**
KNOWLEDGE OF KANNADA IS DESIRABLE FOR ALL THE POSTS.

LECTURERS:

(a) A Doctorate's degree or research work of an equally high standard; and

(b) Good academic record with atleast Second Class (C in the seven point scale) Master's degree in a relevant subject from an Indian University or an equivalent degree from a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

(2) **FOR CONSTITUENT COLLEGE LECTURERS:**

(a) Good academic record with atleast Second Class (C in the seven point scale) Master's degree in a relevant subject from an Indian University or equivalent degree from a foreign University; and

(b) An M.Phil. degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

(3) **UNIVERSITY PUBLIC SCHOOL:**

Assistant Teacher in Drawing: S.S.L.C. Passed having Drawing Master Certificate with teaching experience.

The other details of qualification and Guidelines can be seen in the Instructions Sheet obtained alongwith the set of application forms.

REGISTRAR

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

**INDRAPRASTHA ESTATE, RING ROAD,
NEW DELHI-110 002.**

The Indian Institute of Public Administration, a National Institute for the study of Public Administration, engaged in undertaking research, consultancy and training programmes for civil services, invites applications for the post of a Deputy Librarian in the Institute in the scale of pay of Rs. 3700-125-4950-150-5700.

Prescribed form of application and details about age, qualifications, experience etc., can be obtained from the Registrar. free of charge, by sending a self-addressed envelope of the size of 25 cm x 10 cm.

Appointment may also be made on deputation. Qualifications relaxable in the case of exceptionally well qualified candidates. The Institute may also consider suitable candidates who might have not applied. The Institute reserves the right to fill or not to fill the post. Other things being equal, preference will be given to SC and ST candidates.

Candidates called for interview from outside Delhi will be re-imbursed actual 1st Class rail fare to and fro by the shortest route on production of ticket no. Completed applications in the prescribed form should reach the Registrar on or before **31st October, 1990.**

UNIVERSITY
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Editor :
SUTINDER SINGH

Role of Educational Planning in India

Lina R. Thatte*

Education is a sensitive topic for parents because of the many an sometimes contradictory things that they expect of it for their children They have difficulty in coming to terms with the changes that hav occurred in the population now attending educational establishments an with the way in which changes in economic, social and cultur environment that have affected the school and its ability to act. The expect the school to provide their children with an effective publi educational service while as citizens they want spending to be kept withi certain limits. They also expect, moreover, to shift on to the teachers som of the roles formerly performed by the family.

At the higher levels of education, the worsening unemployment no affecting young people in particular, and the deteriorating competitiv position of our enterprises is forcing people to be sceptical about th educational system that produce so many unqualified youngsters.

A tighter public financial situation and greater competition from othe social needs has led to a growing call for productivity in spending o education, at the expense of the equation: more money is equal to bette quality. Educational systems have also not proved to be an instrument o upward social mobility and equality of opportunity. As against this the have come to be viewed as agents for the reproduction of socia inequalities.

The criticism on the working of the education system often tends t obscure the many-sided interactions between the society and the educatio system. Only with clear understanding and utilization of these interaction can one determine with precision the specific responsibilities of th education system and those of other organisations that influence th educational processes.

Usually there is a fairly broad consensus over the general aims o education. Regardless of how aims are formulated, it is agreed that th prime role of an education system is to satisfy social demand, both individual and collective (a very general concept, which encompasses many others), by preparing young people for an occupation, by teaching them to live in society, by effectively transmitting to them the knowledge and values deemed useful by society, and lastly by performing all these different tasks within the limits of the human, material and financial resource allocated to it by society. Where divergences arise are in the practical business of putting all these different objectives into effect simultaneously.

Role of Educational Planning

Educational planning needs to devise and disseminate methods capable of allowing a synthesis of the most significant features of the educational system to be arrived at in order to identify its principal objectives and construct an interpretative framework within which to consider a series o major themes and options which should in turn lead to decisions around which the broadest possible consensus may be achieved. In pursuit of its ambition to move from diagnosis to actual implementation of projects, educational planning seeks for reasons of pragmatism, to delimit and hence narrow the range of themes broached and possible priorities.

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* *Department of Economics,*
V.G. Vaze College, Mulund, Bombay-400 081.

Educational planning can assert greater control over the future by adopting a scientific approach, by rationalising the political and technical decision making processes, by giving considerations to the interaction between education and every other sphere of social life and by investigating the long term implications of decisions. Such educational planning is practised since 1960s in a number of developed countries as Australia, Germany, France, Japan, Norway.

Our country being a developing one, our educational system faces graver crisis and hence we desperately need educational planning in a much more detailed and exhaustive manner and with greater regularity than prevalent today.

Educational planning should consider the following issues: the demographic problem with its immediate and future implications for the size of the educational system, the teaching profession and the labour market; persisting high rates of unemployment particularly among the youth; changing social demand for education, changing demand, quantitatively and qualitatively, for qualified manpower, and persisting slow economic growth with its restrictive effects on public budgets and the problem of brain drain.

It will be necessary to make quantitative estimation of the immediate effect of demographic changes on school population and on that basis calculate the necessary resources in teaching personnel, finance and school buildings by educational syb-system. At the time of formulating New Policy on Education in 1986, estimates of population in 6-11 age group were obtained and it was recommended that since the existing educational facilities can take care of 40 per cent of relevant population, non-formal education centres be set up for the remaining ones. However, how many of such centres have actually been set up and are successfully functioning, whether resource support to them has been adequate or not is not known, thus indicating complete absence of follow-up of planning.

Further, the study of the relationship between education and the labour market should be a permanent feature of the agenda of national educational planning. There is the perennial need to produce enough qualified manpower to help accelerate economic growth. The technological changes occurring in some industries which are bound to affect both qualitatively and quantitatively the composition and size of labour markets, the need for structural adjustments to raise the competitiveness of the economic system and the ever growing demand from several social groups such as married women to enter the labour market at a time when it is contracting, create a new context which make the education-labour market relationship highly uncertain and very problematic from both an economic and social viewpoint. It calls for a more comprehensive planning based on information on youth unemployment, transition from school to work, together with related and required curriculum changes, raising labour productivity through education and training, labour market information on manpower demand. The long term forecasting of the demand for labour must be undertaken based on research on establishing what qualifications in particular guarantee the broadest possible employability and a high degree of flexibility in working life. Educational planning efforts in analysis of education-labour market relationship should be particularly directed towards two areas:

(i) Increasing and managing the information flow from the labour market to the potential students to facilitate their educational decisions leaving to the labour market the allocative function to balance up demand and supply; and

(ii) Curriculum changes at all educational levels, in response to changing employment needs, with emphasis on the need for such curricula to be as broadly based as possible so as to increase the adaptive capacity of the individuals in the light of changing job function.

In 1966, the Education Commission prepared a manpower planning model based on fixed input-output coefficients. After that the exercise is not repeated. Vocationalisation of higher secondary education was a major objective of the Education Policy adopted in 1968 but due to poor and inadequate planning it made little success from the very inception and its impact was confined to a few states. The course content and curricula of education should have been designed in a manner so as to meet the emerging needs of future and along with it the supportive inputs including finance made available as and when required. Even though the Seventh Five Year Plan recognised the need for manpower planning (The Seventh Five Year Plan, Vol. II, 1985-90) it remained a concept on paper. Even at the time of formulating New Policy on Education in 1986, the wide divergences between demand and supply of skilled manpower was noted down but adequate and necessary measures were not instituted. Especially no provision was made for increasing the information from labour market to potential students and no changes recommended to make educational curricula consistent and relevant to social needs. It must be firmly borne in mind that planning process

(Contd. on page 18)

Seethalakshmi Ramaswami College (Autonomous), Tiruchirapalli

A Brief Note on Innovative Courses

R. Panchapakesan*

The autonomous status conferred by the University Grants Commission on the College has helped the institution to diversify its academic programme in a meaningful manner. The College has ventured into new areas with courses which are in sharp contrast to the traditional arts and science courses. These innovative courses are job oriented and specialised programmes in various fields like Electronics, Hospital Management and Applied Commerce. These courses have been designed keeping in mind the needs of the society for trained and skilled manpower in areas where there is a great dearth of qualified manpower. The following are the innovative programmes the college offers today:

B.Sc. Industrial Electronics
M.Sc. Industrial Electronics
B.Sc. Health Care and Hospital Management
B.Sc. Applied Commerce.

These courses have a professional touch about them. The special feature common to all these courses is the practical training given to the students during the course of study and a vigorous in-service training for about 5 months, which is an integral component of the academic programme. The programmes have been designed as application oriented ones.

B.Sc. and M.Sc. Programme in Industrial Electronics

The three year B.Sc. Programme and the 2 year Postgraduate Programme in Industrial Electronics are run on a highly up-dated syllabus keeping in view the technical needs of Electronics based industries and the latest trends in the field. At the Undergraduate level the students are given a very broadbased comprehensive course covering various units of knowledge—Applied Mathematics, Physics, Basic Electronics, Instrumentation, Electrical Technology, Digital Techniques, Micro Processor, Industrial Electronics, Computer Science and Technology forecasting.

The M.Sc. Programme started last year is intended as a vertical development of the B.Sc. Programme. The course is intended to give the students solid foundation in hardware technology. It has in-built flexibility, giving the students a lot of opportunities for doing experiments and projects on their own right from the very first semester.

At the Postgraduate level minor project has been made a compulsory unit in each semester besides which the students will take a major project. This project will be related to the industries where they work for 5 months (last semester). This has been patterned on the Practice School System of the Birla Institute of Technology and Science, Pilani.

Both the courses have close linkage with established industries where they are given intensive training. For the Undergraduate students the training programme is spread over the second and third year of the course and for the Postgraduates it is part of the entire 2 year course. The students are sent to various industries during summer vacation for in-service training. The industries involved in this programme are:

1. Bharat Heavy Electricals Ltd., Trichy
2. Ordnance Factory, Trichy
3. Golden Rock Railway Workshop, Trichy
4. Simco Meters, Trichy
5. Bharat Electronics, Bangalore
6. English Electric Company of India Ltd., Madras
7. Allied Electronics Ltd., Madras
8. Neyveli Thermal Power Corporation, Neyveli
9. Tuticorin Thermal Power Corporation, Tuticorin
10. National Thermal Power Corporation, Ramagundam
11. Keltron India Ltd.
12. Dalmia Cement (B) Ltd., Dalmiapuram
13. Boiler Controls Private Ltd., Trichy
14. Panel Electronics Ltd.

Successful completion of in-service training is a condition for award of degree.

The first batch has come out just now completing the last stretch of the training programme in the above mentioned industries. This year we are further developing the concept of linkage with industries by attaching our final year and Postgraduate students to M/s. Boiler Controls Pvt. Ltd., and M/s. Panel Electronics Ltd. Under the proposed system these students will work in these factories as part of their regular academic work for about 3 days in a week. This is one way of orienting higher education to real life problem solving needs of the industries. The pattern

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* *Managing Trustee and Secretary,*
Seethalakshmi Ramaswami College (Autonomous),
Tiruchirapalli-620 002.

of networking with industries indicates a major shift in emphasis in the field of educational technology. The emphasis is being shifted now from acquiring theoretical knowledge inside the classroom to acquiring application oriented knowledge in real life situation. In short it is an attempt to take the classroom to Professional locale so that education becomes meaningful and purposeful in terms of the industrial needs.

B.Sc. Programme in Health Care and Hospital Management

This is yet another innovative programme the College has introduced after a detailed survey of the job requirements of this area of service. The dearth of qualified hands who are professionally equipped to be the middle executives or administrators in hospitals and health care centres needs no special emphasis. It is this that made us take up this area for designing a suitable programme. The course has been designed with the help of experts in the field of medicine and management studies.

The course programme covers a wide spectrum of areas of studies—Basic Biological Sciences, Medicine, Surgery, Hospital Organisation, Hospital Services, Health Education, Health Care Management, Organisational Behaviour, Modern Management Techniques, Computer Applications in Hospital Organisations, Vital Statistics, Medical Audit, Inventory Management, Financial Management etc.

Here again, we have introduced the component of practical training as an integral part of the academic programme. The general training is given in Hospitals attached to Bharat Heavy Electricals Ltd., Government Headquarters Hospital, Tiruchy and Private Hospitals. Besides, they are also given an Orientation to Primary Health Care Service through training in Primary Health Centres for about a month. In addition, they are given intensive training during summer vacation for about 5 months spread over the last 2 years of the course programme. The first batch of students who have passed out now were given training in:

1. Aravind Eye Hospital, Postgraduate Institute of Opthalmology, Madurai.
2. Joseph Institute of Opthalmology, Tiruchy.
3. Devaki Hospital, Madras.
4. K.G. Hospital, Coimbatore.
5. Sri Ramakrishna Hospital, Coimbatore.
6. G. Kuppuswamy Naidu Memorial Hospital, Coimbatore.

The feedback we have received from the Hospitals where the students were given training has been very encouraging. More than the classroom learning it is the training part of the course that has really given the students the proper professional equipment for a career in this field.

This year, we propose to make Hospital Training part of their daily academic schedule. Students will be visiting the hospitals 2-3 days in a week. There they will be given training in ward management and other areas of Hospital Administration. It will be a process of learning in professional environment. These students also do a major project as part of the programme.

As regards faculty, besides qualified management faculty we draw faculty support from experts in the field. Dr. Rajamanickam, M.B.B.S., (M.D.), Dr. Nandakumar, M.B.B.S., Dr. Jambagalakshmi, Mrs. Vaijayanthi, M.B.A., from the core faculty for this programme. In addition to lectures, demonstration classes are conducted during their training period. The training part of the course helps in better understanding of the real situation problems.

An open viva was conducted for review of the projects submitted by the final year students and eminent doctors, the District Medical Officer, and the Chief Medical Officer of the Hospital attached to B.H.E.L., Trichy formed the panel for project review. This gave us an opportunity to have very useful dialogue with members of the profession.

B.Sc. Programme in Applied Commerce

This programme has been introduced in the place of Two Year Associate Degree in Accounting Technology which was introduced 3 years back in response to University's policy of promoting 2 year para professional degree courses.

Since the Associate Degree Programme had certain inbuilt handicaps which placed the students in a peculiar situation, the system was suspended. In its place we have now introduced a fulfledged degree programme in Applied Commerce.

The professional touch to the programme has been brought in through the provision of compulsory practical training for a period of 5 months during the course of study. The programme has been designed with the help of academicians, Chartered Accountants, Management experts and experts in the field of Corporate Secretaryship. The programme has been planned in a manner that would help in acquiring high level professional competence in the field.

The students will have to go through practical training in business concerns (partnership firm, company type of organisation, cooperative societies and public enterprises, financial institutions, banks, both private and public sector).

After the completion of training, the candidate has to submit a project report. The project report will be evaluated by a panel of experts.

Effective interaction with the business and commercial organisations will be the key factor in the running of the programme.

Entrepreneurial Development, corporate policies, System Analysis and Management Information System, and Data Processing are some of the units included in the programme. □

Dryland Agriculture in Maharashtra Region

Dr. Har Swarup Singh, Member (Agriculture), Planning Commission, Govt. of India, delivered the Convocaton Address at the Tenth Convocation of the Marathwada Agricultural University, Parbhani. He said, "The development of dryland areas is important not only for obtaining greater output and productivity but, more importantly, on grounds of removal of—or at least a substantial reduction in—regional disparities in the interest of equity and social justice. Correcting the past lopsided development of Indian agriculture by paying attention to development of dryland areas, to crop groups and crops that were neglected until recently (e.g. pulses and oilseeds), and ameliorating the situation of disadvantaged groups (small and marginal farmers), is a key element in the Planning Commission's approach to the Eighth Plan." Excerpts

Convocation

Agricultural Progress in India

Agriculture is receiving a lot of attention currently, and, as you know, the Government has decided to devote 50 per cent of the Plan outlay (States and the Centre combined) to agriculture/rural development. Looking back, Indian Agriculture has made significant progres in increasing crop production and acquiring a fair degree of resilience over the last four decades. This is attributable to a significant extent to the policies, strategies and programmes developed by the Planning Commision, the intensive efforts of agricultural scientists, development and extension workers and, of course, the dynamic response by the farmers.

From the analysis of available data, it is evident that while the extension of crop area contributed substantially to the growth process up to the mid sixties, it was the increase in productivity that accounted for the bulk of the growth in the subsequent period. This is because of some remarkable technological advances, particularly the development of high yielding varieties of wheat and paddy. In view of the urgent need for self sufficiency in food, earlier development efforts were largely concentrated in irrigated areas, where the seed-fertiliser—water based high production technology provided the necessary impetus for quick growth. This resulted in most of the gains in terms of increased production and productivity coming from irrigated areas. However, the development of rainfed dryland areas which constitute about 70 per cent of the net cropped area of the country and account for about 40 per cent of the total foodgrain production did not receive the requisite attention. According to recent assessments, even if the entire available irrigation potential in the country is fully exploited, still about 50 per cent of the total cropped area would continue to be under the rainfed farming system. The fluctuations in agricultural production of dryland areas caused by erratic monsoons have a deleterious effect on the whole economy. Development of rainfed/dryland farming areas is, therefore, vital for mitigating the impact of drought, imparting stability, and enhancing the growth in agricultural production in the country.

Review of Policies and Programmes Involving Rainfed Agriculture

The unirrigated area of the country is characterised by low and unstable crop yields. About 95 per cent of the cultivated area planted to sorghum is rainfed. With respect to pulses, 92 per cent of the area is under rainfed farming. About 80 per cent of the chickpea, maize and cotton area is rainfed while 65 per cent of the area of rapeseed & mustard and 62 per cent under rice are also under rainfed agriculture. By contrast, only 35 per cent of the area planted to wheat is rainfed. As expected, there is a fall in the production of foodgrain during Kharif if the rainfall is deficient/scanty in any year, whereas Rabi foodgrain production is generally not affected. Thus, the variation in foodgrains output at the all-India level is mainly accounted for by fluctuations in the rainfed/dryland areas during Kharif, particularly from the States of Rajasthan, Madhya Pradesh, Karnataka and Maharashtra. As a result of an excellent monsoon, combined with thrust programme like Special Foodgrain Production programme and Special Rice Production programme, foodgrain output recorded an appreciable increase of 21·3 per cent during 1988-89 to a level of 170·3 million tonnes against 140·4 million tonnes in 1987-88, and surpassing by 11·7 per cent the previous peak of 152·4 million tonnes attained in 1983-84.

Reseach efforts made so far by the ICAR and agricultural universities for the development of technology for rainfed areas leave much to be desired. In order to exploit the available potential for the stability and growth of agricultural production and to achieve various national objectives—such as reduction in regional inequalities, poverty removal, creation of income generation and productive employment opportunities, and improvement of ecological balance—the agricultural research establishment has to reorient considerably its dryland research programme.

The Government of India has been paying some attention to the development of rainfed farming, but the efforts made so far have been mainly in the nature of pilot projects. What is most important is to see that the area based planning approach is adopted by the respective States through a systems approach.

Recently, the Planning Commission launched a project of regional planning based on the agro-climatic approach. The strategy aimed at more scientific utilisation of all available resources. The potential for growth and diversification shall have to be fully exploited taking a holistic view of the climate, soil, topography, water resources and irrigation facilities, and relating them to the requirements of output and employment oriented programmes. Of course, the concept of planning based on regional potential has a long term perspective which is being amplified and operationalised during the Eighth Plan.

Study of Dryland Agriculture in Agro-climatic Zone 9 (Western Plateau and Hills Region)

This zone forms a major part of peninsular India and is dominated by dryland agriculture. I believe that a proper understanding of the various facets of resource use and agricultural development pattern in this zone would provide a fairly representative scenario of dryland agricultural in India.

The zone comprises a major part of Maharashtra State (22 district), a part of Madhya Pradesh (11 districts), and a single district of Rajasthan. Per capita availability of cultivable land (about 0.40 ha. in 1982) is higher than the national average—a development factor not so favourable when one takes into account low rainfall and irrigation. There are significant variations in rainfall (578 to 1619 mm of mean rainfall). Most parts of the zone belong to the semiarid category and irrigation was available only to 13 per cent of net sown area for the triennium ending TE) 1984-85.

What I would like to convey to you in terms of dominant strategies for dryland farming with particular reference to this zone is largely based on the work of the Zonal Planning Team (ZPT) under the Chairmanship of Prof. Salvi, the Vice-Chancellor of your University. The Zonal Planning Team has carried out detailed exercises on the strategy and programme formulation for this zone with particular reference to Maharashtra, covering both the crop and non-crop sectors, and dryland as well as irrigated farming. As seen from a perusal of document prepared by the ZPT, agro-climatic features of the four sub-regions of the zone dictate the land and water resource development strategy as well as the cropping pattern.

The analysis of the cropping pattern and crop yields by sub-region would indicate dominance of low value crops like jowar. This zone alone accounts for 47 per cent of the area and 48 per cent of the production of jowar (TE 84-85) of the country. But in the case of cotton it accounts for 38 per cent of area and only 18 per cent of production. Except for jowar and sugarcane, the yield levels of the important crops of the zone are significantly less than the national average. Considering the totality of the agricultural situation in the zone, there is no other alternative to growth in agricultural incomes through productivity but improvement crops and crop rationalisation/diversification.

Livestock also plays an important role in the economy of this dryland region. According to the 1981-82 census, there was 38·5 million livestock population comprising 54 per cent cattle, 13 per cent buffalo, 7 per cent sheep, 23 per cent goats and 3 per cent others. The overall livestock density is not very high (1·12 animals per ha. of cropped area), with availability of pasture land appearing to be a major constraining factor (0.05 ha. per animal).

Improving the productivity of indigenous animals through selective breeding and cross breeding has gained ground in the zone and poultry development is also playing an increasingly important role in terms of income and employment generation for the rural masses. In general, it can be concluded that given the natural constraint in terms of poor and erratic rainfall and limited land availability for supporting livestock population, an integrated programme of land and water resource development and a farming system approach could be the only basis of a long term strategy for the dryland dominated agricultural activity in this zone.

Key Issues and Strategies for Development of Dryland Agriculture in the zone

As can be seen from a quick assessment of the subregional profiles including land and water resources and the cropping pattern, the problem is not so much of the basic deficiency in soil or mean availability of water, but one of

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better management of resources and security against uncertainty.

This is amply demonstrated by the rainfall distribution pattern and its relationship to evapotranspiration (ET) requirements of crops. In an average year, one will find that for the growing season of lead crops, water deficiency—indexed either by the difference between effective rainfall and ET or by retained soil moisture—is not significant. What makes the situation unfavourable to the majority of the farmers in this dryland region is the skewed distribution of rainfall resulting in occurrence of high run-off and dry spells and, more importantly, high inter-year and intra-year variability in rainfall. Analysis of 70 years' monthly rainfall data for the districts in this zone, as carried out by the Agro-climatic Regional Planning Unit (ARPU), Ahmedabad has brought out this feature sharply. For example, analysis of rainfall in Buldhana district in sub-region 3 showed that against average rainfall of 150 mm and 223 mm in June and July, the variation was 0 to 326 mm in June and 0 to 424 mm in July. Distribution of the number of rainy days varied widely (22 to 77 days in a year) resulting in long dry spells in many years. It also needs mentioning that most of the rains (about 87 per cent) are received between June and September.

The evident strategy for such situations will be rain water management and in-situ moisture conservation. Except for some recent successful experiments in this regard, this strategy has been hardly adopted on a significant scale either in this zone or any other part of the country. The result is both low mean and highly variable crop yields. In recent drought years, crop yields ranging between 30 to 50 per cent of the normal have been noticed in many parts of this zone. A *comprehensive watershed development programme* (COWDEP)—which includes components of contour bunding, broad-bed and furrow system, terracing, land shaping, water harvesting structures; soil conservation as well as integrated land use approach—combined with crop husbandry, horticulture agro-forestry and fodder development—is the only solution. The involvement of local community is very important for the success of this experiment when this is carried out on a large scale as in this zone.

The ZPT has identified 21,284 watersheds with an average of 15,000 ha. Some of the success stories of voluntary involvement of people in the State (viz. Adgaon, Palaskhed, Religion, Shindi and Nayagaon) deserve laudable mention in this regard.

Apart from massive adoption of COWDEP, risk management through crop rationalisations and diversification is also the need of the hour. This is where the role of inter-cropping system is highly important, e.g. jowar can be inter-cropped with pigeonpea and cotton with pulses/soybean in sub-regions, 2, 3 and 4. Some of the research efforts of the universities and the ICAR Institute in this respect need to be strengthened both in terms of development and extension.

The required enhancement of income of the average farmer, particularly those with small and marginal holdings, would only be possible with crop diversification and a switch-over to high value crops. In this context, the role of arid horticulture development gains special significance.

Area under horticulture including spices and condiments was only 4.80 lakhs ha. for the zone as a whole (just about 2 per cent of the gross cropped area). There are, however, recent encouraging trends of concentrated horticultural development in various parts of this zone. It is heartening to know that the ZPT has proposed an ambitious programme of horticulture development in about 10 lakh hectares—to be brought under fruit crops like mango, ber, pomegranate and custard apple. Horticulture development, however, needs to be supported by development and expansion of storage, marketing and processing facilities. Fortunately, this aspect is gaining recognition both in the national and zonal plans.

For supplementing income and employment generation livestock, dairy and poultry can play as important role as the crop improvement plan. The ZPT has given meticulous attention not only to improving the breeds but also to fodder development. The latter has received very scanty attention during the past Plans and should be integrated with the wasteland and watershed development programmes. A combination of strategy to increase the area under tree cover by natural regeneration, coppicing and afforestation, and large scale social-forestry and agro-forestry programmes on waste land and marginal land, is required. The ZPT has proposed a target for this zone of developing 1.86 million ha. of forest and 1.02 million ha. of pasture land.

I would like to point out that there is a vast scope for utilisation of *ground water potential* in this zone. And hence, as a long term development perspective, a three-pronged strategy—of integrated watershed development, crop rationalisation/diversification and ground water development—would be desirable to deal with the challenge of extensive dryland agriculture in this zone. I have gone into the findings and recommendations in respect of dryland agriculture in this zone in so much detail because of the similarity of problems and applicability of the recommended solutions to most other dryland areas.

At this stage, I would like to draw your attention to some of the issues in dryland agriculture for the country in general.

Adoption of Technology

The experience gained in recent years endorses the benefits from recent technological advances in dryland farming. Therefore, the logical remedy for the poor crop yield and low profit in these areas of the country lies in the adoption of recommended technology by a large number of farmers for a variety of crops. The level of adoption of new technology in dryland areas is depicted in the following table:

Table 1: Adoption level of recommended practices

Crop/culture	No. of farmers	Percentage of farmers adopting			
		Improved seed	Fertiliser	Plant prote.	Inter culture
Pearl millet					
Anant Pur	144	18.1	12.5	6.8	100.0
Hisar	318	42.5	29.8	13.8	77.0
Bijapur	53	45.3	9.3	24.5	100.0
Solapur	204	84.8	24.5	13.1	94.6
Rajkot	299	72.2	37.1	1.7	94.3
Kavilpathi	102	1.0	6.9	2.0	—
Nagpur	74	13.5	13.5	0.0	—
Varanasi	75	42.7	36.0	0.0	24.0
Jodhpur	103	76.7	76.7	—	100.0
Chickpea					
Varanasi	50	68.0	36.0	24.0	36.0
Hisar	308	13.0	7.8	2.4	19.4

In general it is observed that the adoption of low cost inputs, viz. seed and interculture, is much higher than the adoption of relatively costly practices like application of fertilisers and plant protection measures. The practice of interculture and weeding may also become a high cost practice under conditions of rising wages and competition for labour in peak periods. Even the adoption level of recommended seed is not uniformly high for the crops at a given location. At Hisar about 43 per cent of the farmers are using improved seed of pearl millet but just 13 per cent in the case of chickpea. It indicates that even in the case of low cost inputs it is the relative importance of the crop in a region that determines the level of adoption of a recommended practice.

Socio-Economic Costraints

The common responses given by the farmers for non-adoption of improved dryland technology are: lack of knowledge, non-availability of inputs in time, lack of credit facilities and fear of crop failure. The farmers who are aware of improved technology rarely say that they are not convinced of its superiority. But even when the indicated constraints are tested by making arrangements to supply inputs or credit, adoption has not been forthcoming. The farmers may feel that this is too delicate a matter to be conveyed to any representative of a research centre but it is a fact that often they are not convinced of the benefit of quite a few of the recommended practices. There are *physical constraints* like low productivity lands, erosion hazards, lack of drought power, weak and unhealthy family labour, etc: *psychological barriers,* such as traditional orientation, low level of aspiration, risk aversion and fear of falling into debt: *economic constraints* like a weak resource base, low risk bearing ability, lack of investible funds and poor credit facilities: *infrastructural constraints* like non-availability of good quality inputs at a cartable distance, weak extension support, unfavourable prices, and lack of marketing facilities, etc. Such socio-economic constraints in dryland agriculture which do not appear important in physical terms indeed contribute a great deal to low yields.

The concealed tenancy systems create many socio-economic and technological problems. In the absence of security of land tenure, the farmers do not want to make investment. Inspite of the fact that there is a large unemployment and under-employment in these areas, the farmers do not devote much time and attention even to labour-intensive land development measures which require only small amounts of capital.

Keeping in view the poor resource base of dryland farmers and the under-development of institutional facilities, a massive effort is needed on the institutional front to help move dryland agriculture forward. Special attention should be given to credit services as capital is a key limiting factor in dryland areas. There should be linkages between credit and input supply on the one hand, and marketing of produce and loan recovery on the other. Unless a favourable marketing system is created there will be no incentive to the dryland farmer to produce more. A strong input supply programme and an effective extension support system are needed to facilitate adoption of new technology. It would be imperative to enhance the skills and capabilities of dryland farmers. Above all a crop insurance cover should be provided to dryland farmers to enable them to take risks and make worthwhile investments.

National Approach and Strategy for Development of Dryland Areas

The results of research conducted through 47 selected watersheds by the ICAR clearly reveal that area development on watershed basis is an ideal approach. In a vast country like ours it would not be possible to take up all the rainfed/dryland areas for such a project approach. Hence, priorities must be established for projectising the activities. It is important to use the most relevant techniques for proper watershed development, such as modern crop production technology, improved silvi-pastoral systems, and better livestock management. Each watershed management project should contain the key elements as relevant to the local situation, namely, resource inventory land management system, crop production system, alternative land use system, infrastructural support, research & training of personnel, physical targets, specific financial requirements, and the pattern of funding.

With the objective of conserving and upgrading the production base of land and water and superimposing a scientific production system, a number of dryland development programmes were under implementation during the Seventh Plan period. The National Watershed Development Programme for Rainfed Agriculture (NWDPRA) was initiated in July, 1986 in 99 districts of 16 States, with an approved outlay of Rs. 239 crores. The crops chosen in these areas were based on the following criteria—initial seedling vigour to combat the weed menace, medium tall varieties to avoid lodging and to meet fodder needs, response to low input management, vigorous root system, moderate tillering, ability to recover from cyclical drought, tolerance to pests and diseases, maturity within 90 days, and adequate seed dormancy with non shattering nature.

The water and soil conservation programmes were taken up based on soil and topography. The results obtained through a large number of watershed programmes reveal that average increase of yield from a package of improved practices is about 92.7 per cent in cereals, 84.2 per cent in pulses, and 71.4 per cent in oilseeds. The benefit/cost ratio was 2.23 for chick pea, between 0.12 and 3.82 for pulses, between 0.27 and 1.92 for oilseeds, and between 0.05 and 2.25 for cereals. Inter cropping was found to enhance productivity and increase the benefit/cost ratio. There was increased demand for labour, including female labour, of 19 per cent. The use of bullock power also increased by 20 per cent with the introduction of improved dryland farming practices.

Future Line of Action

The dryland/rainfed areas are caught in the vortex of self perpetuating economic, social and ecological disadvantage. Therefore, the development objectives should enable us to develop these areas to the level that these contribute to future growth. The major goals could be listed as: (i) to conserve, improve and utilise the natural endowments, (ii) to secure stability and growth of agriculture production and productivity, (iii) to, generate employment and income opportunities by developing backward and forward linkages, (iv) to promote restoration of ecological balance through watershed management and other programmes, and (v) to reduce regional inequalities through special area based programmes, as appropriate.

In planning for agricultural production and productivity in the dryland/rainfed areas, the following will need to be ensured: (i) required back up of science & technology with a holistic approach, for each agro-climatic zone/sub-zone, (ii) the farming systems approach the only answer for these areas where complete network planning has to be chalked out for crop-livestock-fisheries and agro forestry programmes, and (iii) involvement of non-official agencies and dedicated individuals with a proven record, and support to their activities in selected areas.

Let me assure you that for successful implementation of the policies, strategies and programmes for the rainfed areas, the Planning Commission is going to extend all required help during the Eighth Five Year Plan. However, it has to be ensured that we improve these areas to the level that no further degradation and denudation takes place and well planned management of these neglected areas contributes to the goal of agricultural/rural development.

The development of dryland areas is important not only for obtaining greater output and productivity but, more importantly, on grounds of removal of—or at least a substantial reduction in—regional disparities in the interest of equity and social justice. Correcting the past lopsided development of Indian agriculture by paying attention to development of dryland areas, to crop groups and crops that were neglected until recently (e.g. pulses and oilseeds), and ameliorating the situation of disadvantaged groups (small and marginal farmers), is a key element in the Planning Commission's approach to the Eighth Plan. ☐

Seminar and Workshop in Botany

As envisaged by the University Grants Commission, to link education with field work and productivity; to provide employment opportunities through applied branches of Botany; to prevent pollution & providing skill for nourishing and designing gardens and to enable the students to apply their knowledge in the study of various agricultural problems, the North Gujarat University redesigned its courses in Botany at the First, Second and Third Year B.Sc. degree classes. In order to meet the challenges arising out of the new curriculla, it was emphasised to conduct a Seminar & Workshop in Botany for the teachers imparting education in the subject. The M.N. College, Visnagar, affiliated to North Gujarat University, organised the Seminar and Workshop in Botany which was inaugurated by Shri Kulinchandra Yagnik, Vice-Chancellor of the University. Shri Shailendra Sinha, General Manager, Gujarat State Forest Development Corporation, presided.

Shri Yagnik, in his inaugural speech explained the importance of such seminars for the teachers and the role they have to play in the changing approaches to education. Shri Sinha in his most informative address on 'Forestry' emphasised that through 'love for tree' the subject could be made more popular and interesting. Shri G.N. Gosai, Principal of the college in his welcome address acquainted the participants with the achievements and healthy traditions of the college. Dr. S.B. Narula, convenor of the Seminar explained the objectives, utility and modernisation of the re-designed curricula.

In all 29 teachers of the subject from the various colleges participated in the Seminar. During the three-day programme there were academic discussions and practical demonstrations on the redesigned curricula. Shri B.I. Patel, Professor, Sardar Krushi University, Dantiwada in his speech on 'Horticulture', the new topic introduced in third year B.Sc. curriculum, explained in detail the importance of the topic and pointed out how its knowledge could be made useful in practical life and how it could help the students in making them self-sufficient. Various systems of plantation were demonstrated in the Laboratory. A suggestion was made that the third year B.Sc. students might be asked to prepare some potted plants' specimens and to submit the same for evaluation at the time of University Examination. It was accepted and appreciated by all. Prof. N.I. Dani, Head of Biology Dept., M.G. Science Institute, Ahmedabad in his speech on 'Genetics' explained how to get solutions of its difficult problems by an easy method or approach. Dr. S.B. Narula spoke on 'Taxonomic System, their importance and usefulness'. Principal G.N. Gosai in his speech on 'Chloroplasts' pointed out the errors, generally met with in the practicals on 'Plant Physiology' and explained how to eradicate them.

Dr. S.A. Patel from Chemistry Dept. of M.N. College spoke on 'Chromatography', the topic introduced in the curriculumn of third year B.Sc. degree course in Botany and explained the modern systems of 'Chromatography'. This topic acting as chain between Botany and Chemistry revealed that if the various faculties of science coordinate with one another and make exchange of thoughts on various difficult topics, most of the difficulties met with in their study could easily be removed.

Speaking on 'Plant Breeding' Prof. V.H. Barot explained as to how the modern principles of Genetics could be applied in hybridization and its advantages made available to the distant farms. Prof. B.P. Patel explained the correct scientific method of preparing different stains and demonstrated culture of micro-organism, while Prof. M.S. Patel demonstrated the mounting of 'Plant Embryo'.

The Seminar accepted the proposal for establishment of 'North-Gujarat Bio-Science Society', for which a committee comprising three members : Dr. D.V. Yogi, Dr. M.I. Patel and Prof. K.M. Patel was formed. The main idea behind this was to provide a medium for exchange of thoughts on various science subjects.

Centre for Adult Education at Kakatiya Varsity

"Even after 43 years of independence, six out of ten people, three out of four women, eight out of ten tribals and eight out of ten scheduled castes are illiterates in our country. This problem of illiteracy with its global dimension cries for a solution," said Prof. Jafar Nizam, Vice-Chancellor of Kakatiya University while inaugurating the 'Centre for Adult & Continuing Education & Extension Activities,' at the Kakatiya University on September 14.

He said that India's battle against illiteracy gained a new thrust with the launching of the National Literacy Mission which aimed at imparting functional literacy to 80 million people in the age group of 15-35 by 1995. The focus was on rural areas with a special concern for women and people belonging to the weaker sections, he said.

The basic unit of the National Literacy Mission was the Adult Education Centre at the village level so as to provide linkage between basic literacy, post-literacy and continuing education, Prof. Nizam said.

Speaking on the occasion, Dr. G. Sreenivas Reddy, Director of the Centre said that 'Extension Activities' were the third dimension equal in importance to teaching and research activities of the university. The universities and colleges with its institutional resources like knowledge, manpower and physical facilities, had an obligation to remedy the problem of illiteracy.

The University Grants Commission (UGC) has sanctioned the Centre for Adult & Continuing Education & Extension Activities with cent per cent financial assistance for implementing Adult Education programme in four districts of Telangana which are under the jurisdiction of the Kakatiya University.

Environmental Biologists to Meet at Aurangabad

The 11th Annual Session of The Academy of Environmental Biology (AEB) is proposed to be held at Marathwada University, Aurangabad from December 21-23, 1990.

The following awards of the Academy will be awarded at the inaugural function.

Dr. Charles Birch FAEB, Emeritus Professor at the University of Sydney (Australia) shall be honoured with "AEB HONOURS"—a scholarly International Award in recognition of his contributions to Science and Society. The award comprises a gold medal and a citation. Dr. B. Meenakumari, Scientist, Central Institute of Fisheries Technology (CIFT), Cochin has been selected for "5th JEB Prize-1989"—a young scientist award, instituted by JEB Foundation for her outstanding research in the field of Environment and Toxicology. The Prize includes a Cash Award of Rs. 1000/- plus a Gold Medal and a Citation. Ms. Amita Rani, Researcher, Infestation Control & Protectant Discipline Central Food Technology Research Institute (CFTRI), Mysore has won the BRPM Gold Medal, 1989 for being first in the young Researchers Research Presentation Competition.

Ms. C.S. Oak, Deptt. of Biological Sciences, R. Ruia College, Matunga, Bombay, Mr. Saju Abraham, Deptt. of Botany, University of Kerala, Trivendrum, Ms. Bela Zutshi, Fishery Biology Section, Deptt. of Zoology, Bangalore University, Bangalore, D. Vasanthi, Deptt. of Zoology, Holy Cross College, Tiruchy, and Mr. A.K. Bana, Deptt. of Zoology, Meerut College, Meerut-250 001 have also been recommended for the "BPA certificate-1989".

On this occasion a Symposium & BRPM Competition on "Environmental Pollution & Resources of Land and Water" are being planned. The main objectives of the Session are to review and analyse the situations and to take stock of the outstanding problems of the Environment besides providing the scientists and members of AEB a forum for exchange of the information and updating the current knowledge of Environmental Pollution and Toxicology. The Programme embraces paper reading sessions, invited lectures, meetings and group discussions. For details please contact: Dr. U.H. Mane, Org. Secretary, Department of Zoology, Marathwada University, Aurangabad-431 004 (MS).

News from Agril. Varsities

Training Course on Wheat Production

Dr. G.S. Gill, Director of Extension Education of the Punjab Agricultural University while addressing the concluding function of a three-day Discussion-cum-Seminar on 'Wheat Production Technology' said that evolution of high-yielding improved varieties of wheat, matching technology and mechanization had played a significant role in the advent of green revolution in this part of the country. He said that the productivity of wheat in Punjab was the highest in the country and added that disparity in the productivity of wheat existed not only in the major wheat producing states of the country but also within the dis-

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Women's Studies Programmes and Women's Organisations

The Association of Indian Universities (AIU) is preparing a Directory of Women's Studies Programmes and Women's Organizations in India in collaboration with the Commonwealth of Learning (COL), Vancouver, Canada. The Association invites all such organizations working in any part of the country to get in touch with the Secretary at the following address for their inclusion in the proposed Directory:

The Secretary
Association of Indian Universities
AIU House,
16 Kotla Marg,
New Delhi 110 002.

tricts of various States. To remove the disparity in yield, Dr. Gill suggested that farm technology suitable for varying situations should be made available to the farmers for quick adoption by them.

Since seed was the major constraint, Dr. Gill emphasized that pure and disease-free seed should be used for higher yields. He disclosed that the PAU had recently introduced a 'seed village concept' to overcome the shortage of quality seed. He further said that the PAU had close linkages with the farmers through its Farm Advisory Service Staff and the field functionaries of the State Department of Agriculture which proved to be very helpful in increasing the productivity of various crops.

Dr. O.P. Malhotra, Associate Director of the Advanced Centre of Training in Wheat Production Technology of the PAU, who presented a brief report of the training course, said that 12 lectures on various aspects of wheat cultivation were delivered by the Senior Scientists apart from practicals, and visits to various departments of the University and progressive farmers & agro-industrial units. Dr. Malhotra informed that a good number of senior Agricultural Officers of Uttar Pradesh, Rajasthan, Jammu and Kashmir and Punjab attended the training course.

News from UGC

Countrywide Classroom Programme

Between Ist October to 7th October, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

1.10.90

"Classical Mechanics – I Galileo's Principle of Relativity – A"

"Appropriate Technology – I"

"Earthworms – IV"

2.10.90

No Telecast

3.10.90

"Efficient Structural Forms IV: The Vault & Dome"

"Architecture of Ghat Ki Guni"

"Plains & Plateaus"

4.10.90

"COBOL – 3: Elements of COBOL"

"Teaching and Learning English"

"In Search of Ethnic – Dimensions II : The Koyas"

5.10.90

"Fundamentals of Mechanics – II"

"Rapid Rural Appraisal – Learning from the Villagers – 1"

"Noise Pollution"

6.10.90

"Rasa Ranjita : Understanding Indian Dance – 2 : Kathakali II"

"UNICEF – First Forty Years"

"Reflections on Eisenstain"

7.10.90

No Telecast

2nd Transmission
4.00 p.m. to 5.00 p.m.

1.10.90

"A Quantum Leap Forward"

"Management B : Work Study"

"Preventing Pesticide Poisoning"

2.10.90

No Telecast

3.10.90

"Solar Research – VI"

"Is Peace Breaking Out?"

"Plants Fossils – III : The Evolution from Algae to Angiosperms"

4.10.90

"Computer Memory – I"

"Borrowings in English : The French Connection"

5.10.90

"Astronomy through the Ages – II"

"Directive Principles : Are they Valid Today?"

"Micro-organisms : Beneficial Activities"

6.10.90

"Chinese Shadow Play"

"Telugu Yakshaganam"

"Music Beyond the Frontiers"

7.10.90

No Telecast

We Congratulate . . .

Prof. Bhoomitra Deva who has taken over as Vice-Chancellor of the Gorakhpur University.

News from Abroad

Strategies in the Struggle Against Illiteracy

UNESCO's International Conference on Education held recently in Geneva has adopted a recommendation addressed to Member States concerning the policies, strategies and operational programmes needed in the struggle against illiteracy in the next ten years.

The recommendation of the Conference states that literacy forms the core of any process of education which aims at generating awareness, acumen and the concept of cultural identity. It developes the critical faculties that offer a means of escape from the many forms of resignation born of ignorance.

The recommendation lists several measures that need to be taken to achieve time-bound goals. One is the drastic reduction of drop-outs from primary schools through effective guidance, consultation with parents and the local community and the provision of mid-day meals and other incentives, the involvements of non-governmental and voluntary agencies in literacy work at different levels. In trying to eliminate disparities between men and women and between boys and girls in primary school, any effective policy should be formulated in cooperation with women's organisations.

The involvement and participation of young people and adults in identifying basic learning needs is also stressed in the recommendation. Basic education programmes should be directly linked to the concerns of their daily life, and local communities should be encouraged to determine their own goals and responsibilities in concrete terms.

Low Cholesterol Egg

The creation of a low-cholesterol egg is being attempted at Murdoch University in Western Australia and the results of the research are expected within 18 months. A senior lecturer in the university's biotechnology program, Dr. Michael Borowitzka, will receive a grant of $100000 from the Egg Industry Research Council over the next three years for a research project aimed at lowering the cholesterol content and changing the fatty and composition of the egg.

Dr. Borowitzka, animal nutritionist, Mike Hoxey, who works with a Perth stockfeed firm, and two research assistants will aim at improving the nutritional quality of eggs by modifying the diet of 56 hens.

The project is being run without administering drugs or artificial additives.

Dr. Borowitzka is confident the cholesterol content can be lowered. "But you can only go so far along that particular line because if you lower it too much the chickens stop laying eggs " he said.

He believes changing the fatty acid composition of eggs will produce many more benefits. The essential long chain polyunsaturated fatty acids are necessary in the human diet because our bodies cannot make them. One of their roles is to change the body's metabolism and lower cholesterol levels. They are also particularly important in the diet of recently weaned infants because they assist in the development of the nervous system. "We're using a combination of strategies to enrich the egg yolk in these fatty acids, he said.

One potential source of these fatty acids in the chicken diet is fish oil but the problem is it also makes the eggs taste fishy so we have developed another strategy," he said. "We'll modify the diet so that when you eat an egg you'll get the natural components you'd get if you ate an egg and a piece of fish a day," Dr. Borowitzka said.

"Going one step further and changing the fatty acid composition makes eggs a health food. Such an egg would probably be a little more expensive than your average egg, but not a great deal more "We'll know how well our basic concepts work by about the middle of next year. The other 18 months will be spent on economic analysis. Obviously we don't want $1 or $2 eggs," he said.

"At the moment we are feeding the chickens different diets, collecting the eggs, doing chemical analyses (for cholesterol and fatty acid content), analysing the taste, the smell, the size, the yolk colour and various other thing," he said.

"We also need to know if the feed we are giving them affects their productivity."

Dr. Borowitzka is planning to extend the project to look at whether the different diet has an effect on chicken meat.

He stressed a low cholesterol egg would do little to improve the lot of someone who already had a high cholesterol level but would be wonderful for people with normal cholesterol levels.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for awards of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department of Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in AIU Library during September, 1990.

EDUCATIONAL PHILOSOPHY

Bollnow, Otto Friedrich. On proper practice in school and life: A study in educational anthropology. *Education* 41, 1990, 91-7.

Pettit, Lawrence K. Problems of ethics in higher education. *Ednl Record* 71(3), 1990, 34-8.

Walters, Kerry S. Critical thinking, rationality and the vulcanization of students. *J Hr Edn* 61(4), 1990, 448-67.

EDUCATIONAL PSYCHOLOGY

Lassahn, Rudolf. Education is hard work fighting against the mere subjective nature of behaviour. *Education* 41, 1990, 29-44.

Meyer, J.H.F. and Muller, M.W. Evaluating the quality of student learning-I: An unfolding analysis of the association between perceptions of learning context and approaches to studying at an individual level. *Studies Hr Edn* 15(2), 1990, 131-54.

EDUCATIONAL SOCIOLOGY

Bhattacharjea, Ajit. Skirting the basic issue. *Mainstream* 28(46), 1990, 3, 34-5.

Chakravartty, Nikhil. Terrible indictment of our education system. *Mainstream* 28(47), 1990, 5, 31.

Dube, S.C. Against fratricidal caste war. *Mainstream* 28(46), 1990, 4-5.

Hanumantha Rao, C.H. Job reservations for backward classes. *Mainstream* 28(46), 1990, 6,9.

Nuna, Sheel C. and Nuna, Anita. Education-health linkages: A global perspective. *J Ednl Planning & Admn* 3(1&2), 1989, 25-42.

Paranjape, H.K. Implementing Mandal Report: A disastrous step. Mainstream 28(47), 1990, 6-10.

EDUCATIONAL ADMINISTRATION

Berdahl, Robert. Academic freedom, autonomy and accountability in British universities. *Studies Hr Edn* 15(2), 1990, 169-80.

Graff, Violette. Aligarh's long quest for 'Minority' status: AMU (Amendment) Act, 1981. *Eco Pol Weekly* 25(32), 1990, 1771-81.

McKee, Christine and Belson, Suzanne. The Ombudsman in Canadian universities: And justice for all. *Studies Hr Edn* 15(2), 1990, 197-206.

Mukhopadhyay, M. Recruitment in education: Need for modernization. *J Ednl Planning & Admn* 3(1&2), 1989, 69-79.

Neumann, Anna. Making mistakes: Error and learning in the college presidency. *J Hr Edn* 61(4), 1990, 386-407.

Schaw, Walter A. Building for a thousand years. *Ednl Record* 71(3), 1990, 44-6.

Tasker, M.E. and Packham, D.E. Freedom, funding and the future of the universities. *Studies Hr Edn* 15(2), 1990, 181-95.

EDUCATIONAL RESEARCH

Mathisen, Wener Christie. The problem-solving community. *Knowledge* 11(4), 1990, 410-27.

EDUCATIONAL EVALUATION

Dedrick, Esther J. and others. The accuracy of evaluations made by logical and illogical raters using a mixed standard scale format. *Ednl Psy Measurement* 50(2), 1990, 411-9.

Mossholder, Kevin W. and others. On using regression coefficients to interpret moderator effects. *Ednl Psy Measurement* 50(2), 1990, 255-63.

Spray, Judith A. Effect of the medium of item presentation on examinee performance and item characteristics. *J Ednl Measurement* 26(3), 1989, 261-71.

Stiggins, Richard J. and others. Measuring thinking skills through classroom assessment. *J Ednl Measurement* 26(3), 1989, 233-46.

ECONOMICS OF EDUCATION

Khadria, Binod. Migration of human capital to United States. *Eco Pol Weekly* 25(32), 1990, 1784-94.

Khadria, Binod. The subsidies question in higher education: Tight-rope walking for public policy makers in developing countries. *J Ednl Planning & Admn* 3(1&2), 1989, 43-59.

Shri Prakash and others. Economic growth and literacy: International experience. *J Ednl Planning & Admn 3(1&2), 1989, 1-24.*

SCIENCE EDUCATION

Bhandari, K.S. Planning and management of science education in the third world countries. *J Ednl Planning & Admn* 3(1&2), 1989, 60-8.

VOCATIONAL EDUCATION

Baxter, E. Paul. Resource-based education in chemical engineering: The history and impact of a radical teaching innovation. *Studies Hr Edn* 15(2), 1990, 223-40.

ADULT EDUCATION

Henry, Jeanne. Enriching prior knowledge: Enhancing mature literacy in higher education. *J Hr Edn* 61(4), 1990, 425-47

Terhart, Ewald. Teaching and learning in adult education in the Federal Republic of Germany. *Education* 41, 1990, 79-90.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Brown Sherman, Mary Antoinette. The university in modern Africa: Toward the twenty-first century. *J Hr Edn* 61(4), 1990, 363-85.

Hamid, Jamaludin A. Development of education in Malaysia. *J Ednl Planning & Admn* 3(1&2), 1989, 126-32.

James, Wilmot G. Apartheid, the university and change in South Africa. *Academe* 76(3), 1990, 20-3.

Kerr, Clark. The American mixture of higher education in perspective: Four dimensions. *Hr Edn* 19(1), 1990, 1-19.

Omari, R. Christine and Kishepo, Mabula V. National Policy on Education: Formation and implementation processes in United Republic of Tanzania. *J Ednl Planning & Admn* 3(1&2), 1989, 160-3.

Poudyal, Shiva Prasad. Some aspects of educational planning and administration in Nepal. *J Ednl Planning & Admn* 3(1&2), 1989, 139-45.

Shore, Bruce M. and others. Research as a model for university teaching. *Hr Edn* 19(1), 1990, 21-35.

Skiera, Ehrenhard. The progressive education movement and school in Europe: Developments, teaching-method profiles, perspectives. *Education* 41, 1990, 7-28.

Trythall, J.W.D. The expansion of British higher education. *Academe* 76(3), 1990, 24-6.

Xiao Cai. China: Outward conformity, inner despair. *Academe* 76(3), 1990, 8-12.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

BIOLOGICAL SCIENCES

Anthropology

1. Das, Sumita. *Blood-groups and reproduction with special reference to selection and polymorphism in Mangali population.* Calcutta.

2. Ray, Subrata Kumar. *Health status and labour productivity.* Calcutta.

3. Sarkar, Sankar Kr. *A study of the impact of community development programmes on the Garos of Rissu-Belpara development block in the District of Garo Hills, Meghalaya.* Dibrugarh. Dr. K.C Mahanta, Reader, Dibrugarh University, Dibrugarh.

4. Vijaya Kumar, Manthripragada. *Biological composition of the three isolates of Siddis of Karnataka: A hybrid African-Indian population.* Calcutta

Environmental Sciences

1. Tangirala, Rama Seshu. *Air quality simulation studies in complex terrain.* JNU. Prof. B. Padmanabhamurty.

Biology

1. Nipaney, Prakash Chandra. *Studies in bioenergy: Generation of*

biogas from aquatic weeds with special reference to Salvinia (Salvinia molesta Mitchell). Calicut. Dr. S.A. Abbasi, Prof. and Course Director, Dr. Salim Ali School of Ecology, Pondicherry University, Pondicherry.

2. Palanisamy, K. *Studies on the digestive enzymes of the cultivable grey mullet, Liza parsia (Hamilton Buchanan, 1822).* CUST. Dr. P. Parameswaran Pillai, Senior Scientist, Mangalore Research Centre, Central Marine Fisheries Research Institute, Bolar, Mangalore.

3. Periyanan, S. *Ultraviolet radiation induced structural and functional changes in thylakoid membranes.* Madurai.

4. Sundaresan, P. *Factors influencing the symbiosis between host plant, Vigna unguiculata and the mycorrhizal fungus, Glomus fasciculatum.* Madurai.

5. Velpandi, A. *Studies on the effects of biocide on aquatic organism, Laccotrephes griseus (Hemiptera).* Madurai.

Biochemistry

1. Chakraborti, Dhrubajyoti. *Studies on the regulation of inducible tryptophanase system in Vibrio cholerae.* Calcutta.

2. Chakrabarti, Sumita. *Studies on the action of electroacupuncture on psychopharmacologic drug (Diazepam)–induced changes in inhibitory neurotransmitter (GABA) of mammalian central nervous system.* Calcutta.

3. Ghosh, Kalpana. *Toxicological evaluation of Lac dye with special reference to reproductive and few other tissues.* Calcutta.

4. Goswami, Subhendu. *Biochemical aspects of anoxia induced brain damage with special reference to GABA metabolism and some membrane bound enzymes.* Calcutta.

5. Mukhopadhyay, Sila. *Biochemical studies on the effects of cadmium addition in vitro on human blood corpuscles.* Calcutta.

6. Srivastava, Anand Kumar. *Structure and function of ribosomes.* BHU. Prof. D.P. Burma.

Microbiology

1. Saha, Samir Kumar. *Studies on enteropathogenicity of Campylobacter jejuni.* BHU. Prof. S.C. Sanyal, Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

2. Sai Ram, M. *Single step conversion of cellulosic biomass to ethanol: Isolation and characterization of Clostridium thermocellum strain SS_8 and GS_1.* Osmania.

3. Setarunnahar. *Studies on the new cholera toxin.* BHU. Prof. S.C. Sanyal, Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

Botany

1. Abraham, K. Joy. *Phytoalexins and other post-infectional compounds of some economically important trees of Gujarat.* Baroda.

2. Agarwal, Neeru. *Studies on regeneration of tendu, Diospyros melanoxylon Roxb. using tissue culture technique.* Durgawati. Dr. Y.K. Bansal, Department of Bioscience, Rani Durgawati Vishwavidyalaya, Jabalpur.

3. Arora, Renu. *Field assessment of variability in Ro and R generations of plants regenerated from tissue cultures of Brassica juncea (L) Czern.* Delhi.

4. Bhattacharyya, Swapan. *Studies on the iron oxidising Thiobacilli and its application in the leaching of metals.* Calcutta.

5. Chaturvedi, Rashim. *Pollutant interaction assay using different systems.* Vikram. Dr. P.S. Dubey, Head, Department of Botany Vikram University, Ujjain.

6. Dubey, Ashit Kumar. *Flora of Orissa state: The monocotyledons family 167-200 in Bentham and Hooker's system, 1862-1883.* Sambalpur. Dr. G. Panigarhi, Ex-Jt. Director and Emeritus Scientist, Botanical Survey of India, Howrah.

7. Gaur, Hira Lal. *Effect of plant hormones on growth behaviour of certain plants.* BHU. Prof. D.N. Tyagi, Reader, Department of Plant Physiology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

8. Gupta, Ishani. *Plant physiological investigation of Tephrosia candida Dc. with special emphasis on its utilization in ecodevelopment programme in North Bengal, India.* NBU.

9. Jelani, Shaik. *Pharmacognostic studies on some Indian medicinal plants, Lamiaceae.* Osmania.

10. Jha, Birendra Nath. *Studies on the climatic factors on the development and efficiency of ectomycorrhizae of Pine, Pinus kesiya Royle Ex-Gordon.* NEHU. Dr. G.D. Sharma, Department of Botany, North Eastern Hill University, Shillong and Dr. R.R. Mishra, Department of Botany, North Eastern Hill University, Shillong.

11. Karmacharya, Siddhi Bir. *Ecological studies on phenology and resource allocation in teak plantations in a dry tropical region.* BHU. Dr. K.P. Singh, Reader, Department of Botany, Banaras Hindu University, Varanasi.

12. Krishna, C.V. *Physiological studies on amelioration of water stress by foliar nutrition in groundnut, Arachis hypogaea L.* Venkateswara. Prof. G. Rajeswara Rao, Department of Botany, Sri Venkateswara University College, Tirupati.

13. Krishnaswamy, S. *Studies in chloroplast genome expression under heat shock.* Madurai.

14. Laxmana Murthy, B. *Cytological and mutation studies on Trigonella foenum graecum L.* Osmania.

15. Mahajan, Indra. *Effect of water quality on phytoplankton dynamics and primary productivity of Renuka and Rewalsar lakes, Himachal Pradesh.* HP.

16. Manavalan, A. *Seedling vigour and bioproductivity in woody biomass species.* Madurai.

17. Manoj Kumar. *Histochemical and histoenzymological studies on the pistil of Solanum melongena L. and Asphodelus tenuifolius Cav.* Delhi.

18. Medhabati Devi, T. *Physiological studies in mango, Mangifera indica L.* BHU. Prof. D.N. Tyagi, Reader, Department of Plant Physiology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi

19. Nagalakshmamma, K.V. *Aerobiological studies and pollen flora of Bangalore South*. Bangalore. Prof. Shripad N. Agashe, Department of Botany, Jnana Bharathi Campus, Bangalore University, Bangalore.

20. Natarajan, K. *Ecophysiological studies of fast growing tree species, Leucaena leucocephala (Lam.) de wit and fodder grass, Heteropogon contortus Beauv*. Madurai.

21. Pandya, Neeta Rakesh. *Effect of industrial air pollution on some vegetables and cash crops*. Baroda

22. Paras Nath. *Effect of growth substances on physiological behaviour of plants*. BHU. Dr. D.N. Tyagi, Reader, Department of Plant Physiology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

23. Prasad, Poonam. *Ammonium transport in a N_2-fixing cyanobacterium Nostoc calcicola Breb*. BHU. Dr. A.K. Kashyap, Reader, Department of Botany, Banaras Hindu University, Varanasi.

24. Purohit, Sadhna. *Hormonal control of stomatal opening interaction of abscissic acid and phenolic compounds in regulation of stomatal movements*. Devi Ahilya. Dr. S.M. Laloriya, Chancellor, Ravishankar University, Raipur.

25. Reddy, K.V. *Effect of cement dust pollution on plants in Neemuch-Nimblahera cement zone*. Vikram. Dr. P.S. Dubey, Head, Department of Botany, Vikram University, Ujjain.

26. Roy, Sadhana. *Gametophyte morphogenesis and reproductive biology of some Indian ferns*. BHU. Prof. S.K. Roy, Department of Botany, Banaras Hindu University, Varanasi.

27. Sarada, Kurra. *Studies on karyology, nutrition and developmental morphology of some local chlorococcalean green algae*. BHU. Prof. Y.B.K. Chaudhary, Department of Botany, Banaras Hindu University, Varanasi.

28. Singh, Abha. *Mutagenesis, ultraviolet sensitivity and nitrogen metabolism of blue green algae under anaerobiosis*. BHU. Prof. H.D. Kumar, Department of Botany, Banaras Hindu University, Varanasi.

29. Srivastava, Subhash Chandra. *Variation in microbial C, N and P in soils of selected terrestrial ecosystems of dry tropical forest environment*. BHU. Prof. J.S. Singh, Department of Botany, Banaras Hindu University, Varanasi.

30. Thomas, P.J. *Chemosystematic and pharmacognostic studies on some Indian members of the Rubiaceae*. Baroda.

31. Verma, Hemant Kumar. *Forensic investigation of some Indian poisonous and medicinal plants*. Osmania.

Agriculture

1. Badgire, Dnyanoba Ramrao. *Investigation on anthracnose of cotton caused by Colletotrichum spp*. Marathwada Agrl. Dr. C.D. Mayee, Prof., Department of Plant Pathology, Marathwada Agricultural University, Parbhani.

2. Hapase, Ramesh Sopanrao. *Development of new male sterile lines in pearl millet, Pennisetum americanum (L) Leeke*. MP Krishi. Dr. S.D. Ugale, Prof., Department of Bajra Breeding, Mahatma Phule Krishi Vidyapeeth, Rahuri.

3. Jadhav, Bhaskar Sakharam. *Studies on the effect of irrigation scheduling and irrigation layouts with and without mulch on growth, yield and quality of Maize, Zea mays L. in rabi season*. MP Krishi. Shri S.B. Jadhav, Sugarcane Specialist, Padegaon, Post-Nira, Pune.

4. Kamble, Laxman Pandu. *Genesis and development of agricultural education in Maharashtra State*. MP Krishi. Dr. T.S. Khuspe, Head, Department of Agricultural Extension, Mahatma Phule Agricultural University, Rahuri.

5. Nag, Abhijeet. *Some ecological studies on cutworm, Agrotis ipsilon (Hufn.) in East Uttar Pradesh*. BHU. Dr. Paras Nath, Lecturer, Department of Entomology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

6. Navale, Pradip Anna. *Selection of combining ability in pearl millet, Pennisetum glaucum R. Br*. MP Krishi. Dr. G. Harinarayana, Project Coordinator, All India Coordinated Pearl Millet Improvement Project, Agricultural College Campus, Pune.

7. Nema, Makhan Lal. *Effect of various herbicides on crop-weed association: Growth, yield and quality of soybean under varying fertility levels and row width*. Devi Ahilya.

8. Patel, Bachubhai Prahledbhai. *Entrepreneurial behaviour of progressive farmers: A comparative analysis*. Marathwada Agrl. Dr. G.G. Nandapurkar, Head, Department of Agricultural Extension, Marathwada Agricultural University, Parbhani.

9. Sarangthem, Indira. *Thermodynamics of zinc chelate reactions in calcareous soils in relation to zinc nutrition of crops*. Rajendra Agrl.

10. Singh, Rajesh Kumar. *Genetic studies on yield and yield components using generation means, NCDIII and TTC analysis in field pea, Pisum sativum L*. BHU. Dr. U.P. Singh, Reader, Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

11. Sinha, Surya Shekhar. *Nitrogen fertilization and efficacy of herbicides under different methods of upland rice cultivation in calcareous soil*. Rajendra Agrl.

Zoology

1. Dasgupta, Subirchandra. *Investigations concerning the venom of scorpion, Heterometrus bengalensis C L Koch*. Calcutta.

2. Ghosh, Dilip Kumar. *Membrane glycoconjugates of Indian leishmaniae—Biochemical and immunological analysis*. Calcutta.

3. Guin, Debprasad. *Ecology and behaviour of gaur, Bos gaurus H. Smith in North Bengal region, West Bengal, India*. NBU.

4. Jaya, K. *Studies on histochemical and histoenzymological aspects of the helminth parasite Rictularia ratti Khera, 1956 (nematode) parasitising field rat, Tatera indica indica*. Osmania.

5. Kalsi, Rajiv Singh. *Breeding biology of the redwattled lapwing, Vanellus indicus indicus Boddaert, alongwith observations on some aspects of its maintenance behaviour*. Panjab.

6. Kirubagaran, K. *Endrocrine and neuroendocrine physiology of the catfish, Clarias batrachus in relation to mercury treatments*. BHU. Dr. K.P. Joy, Lecturer, Department of Zoology, Banaras Hindu University, Varanasi.

7. Mandal, Aditya. *Studies on physiopathological effects of pesticides on some common Indian birds.* Calcutta.

8. Ragland, Mahima. *Biological and ecophysiological studies on Xenobolus carnifex (Spirobolida: Diplopoda) a selected millipede of Madurai.* Madurai.

9. Sarala Devi, M. *Studies on the community structure of benthic nematodes and their fluctuations in Hussain Sagar lake in relation to the influence of industrial affluents.* Osmania.

10. Saran, Shweta. *Molecular changes during aging of the rat. Structural modifications of DNA, chromatin conformation and function.* BHU. Prof. M.S. Kanungo, Department of Zoology, Banaras Hindu University, Varanasi.

11. Sengupta, Amita. *Physiology of thyroid gland in turtles.* Calcutta.

12. Tiwari, Jagdish Narain. *Studies on some aspects of reproduction in Dysdercus Koenigii Fabr. (Heteroptera: Pyrrhocoridae).* BHU. Dr. K.P. Srivastava, Prof., Department of Zoology, Banaras Hindu University, Varanasi.

13. Vanaja, D. *Comparative evaluation of few flukicides on the protein metabolism of Fischoderius sp. (trematode) and host, buffalo.* Osmania.

14. Venkateshwarlu, M. *Studies on the fresh water crab, Barytelphusa querini with special reference to the pesticidal impact.* Gulbarga. Dr. S.A.T. Venkatachari, Prof. and Chairman, Department of Zoology, Gulbarga University, Gulbarga.

Medical Sciences

1. Dhokalia, Apsara. *Behavioural analysis and therapy of coronary heart disease prone persons.* BHU. Dr. Sandhya Singh Kaushik.

2. Kundu, Sujata. *Chemistry of withasteroids of Datura metel.* BHU. Prof. A.B. Ray, Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

3. Nayak, Upendra. *Study of diagnostic problems in beta thalassemia trait.* Sambalpur. Dr. B.C. Meheta, Haematologist, K.M.E. Hospital, Parel, Bombay.

4. Pandey, Bajrang Prasad Laxminarayan. *Studies on some immunologic and biochemical aspects of antiasthmatic action of Picrorhiza kurroa Royle Ex-Benth.* BHU. Prof. S.S. Gambhir, Department of Pharmacology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

5. Shukla, Punam Rani. *A study of psychosocial risk factors in coronary heart disease.* BHU. Prof. S.N. Tripathi, Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

6. Siddiqui, Nadeem. *Synthesis of potential CNS active agents.* BHU. Dr. S.N. Pandey, Reader, Department of Pharmaceutics, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

7. Singh, Anubha. *Clinical and experimental evaluation of the protective effect of an indigenous drug, Boerhaavia diffusa Linn in urinary tract infection and pyelonephritis.* BHU. Dr. R.G. Singh.

8. Srivastava, Suneeta. Dietary factors in aetiology of goitre. BHU. Prof. K.N. Agrawal, Department of Paediatrics, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

9. Suryanarayana Rao, N. *Systems analysis of community based distribution at Varanasi District.* BHU. Prof. I.C. Tiwari.

10. Upadhyaya, Lokesh. *Role of certain biogenicamines in stress mediated endocrine disorder with particular reference to hyperthyroidism.* BHU. Dr. K.N. Udupa; Dr. G.P. Dubey and Dr. J.K. Agrawal.

11. Vummadisingu, Venkateswara Prasad. *Studies on ayurvedic controversial drugs with special reference to Shankhapushpi.* BHU. Dr. K.C. Chunekar, Reader, Department of Dravyaguna, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

Animal Husbandry

1. Katara, Ram Vir. *Preparation of chhena and rasogolla from milk-soy milk blends.* BHU. Prof. V.N. Bhargava, Department of Animal Husbandary and Dairying, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

2. Pandey, Rajendra Kumar. *Investigations on the labour requirements of selected dairy-herds in Uttar Pradesh.* BHU. Dr. V.N. Bhargava, Prof., Department of Animal Husbandry and Dairying, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

3. Shukla, Shalik Gram. *Production of chhena and rasogolla from buttermilk fortified with soymilk.* BHU. Prof. V.N. Bhargava, Department of Animal Husbandry and Dairying, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

Role of Educational Planning in India

(Contd. from page 2)

involves all sorts of actors including researchers, journalists, politicians, administrators, teachers, parents and their representatives.

Indian educational planning can be called normative planning pertaining to the setting of a general educational philosophy and to the selection of a set of policy objectives. It is a framework rather than a plan taking a long term perspective seeking to relate educational development to the changing social and economic context. It is not strictly linked with technological, financial and other resource constraints. In order to move to strategic, operational and administrative planning we must have adequate information and research done on several relevant and important issues. It is not enough to have abundant data on broad indices of our educational development but a total coherent and integrated picture of this development. What is crucially needed is establishing firm linkages between education and related sectors, discovering less costly techniques of development, intensive utilisation of existing facilities, effective economies etc. This only would enable the education system to fulfil, to some extent, the multitude of expectations confronting it today. ☐

WILDLIFE INSTITUTE OF INDIA

P.O. NEW FOREST : DEHRA DUN

(An Autonomous Institution under the Ministry of Environment & Forests, Govt. of India)

Advertisement NO. A/2-14/89/WII-II

Applications are invited for the award of Junior Research Fellowships (JRFs) and Research Associateship (RAs) for the following Institute's research projects:

A. Junior Research Fellowships – Six on a consolidated fellowship of Rs. 1800/- (Rs. One thousand eight hundred only) per month. JRFs will not be entitled to any other allowances and retirement benefits etc. and they will be governed by the "WII rules for JRFs/SRFs".

1. Short term project-1 (16 months study by a JRF):

"Assessment of human impact on the forest of Mudumalai WLS with particular reference to Masinagudi Village".

(This will form a part of ongoing Masinagudi ecodevelopment study).

Short term project-2 (for 1 year by a JRF):

"Development of laboratory techniques for determination of carnivore diet"

Project-3 (Full three years study by a JRF):

"A study on impacts upon lion and ungulates habitates of management practices in Gir National Park and Sanctuary"

Project-4 (Full three years study by 2 JRFs):

"Ecology and genetics of *Capra ibex* in India".

Project-5 (One JRF for 2½ yrs.

Environmental Impact Assessment of Narmada Sagar Project – for socio-economic aspects

Presently 6 JRFs are required for varying project tenures (one year to three years). However, project term may extended further.

2. Eligibility

M.Sc. Botany/Zoology/Forestry/Life Sciences/Experimental Biology/Environmental/Sciences/Biological Sciences/Wildlife Science with a minimum 55% marks in aggregate.

OR

M.A. Sociology/Economics/Mass Communication.

Age Limit

Below 30 years (as on the last date fixed for the receipt of application).

General

(i) Candidates should clearly mention their preferences for the above research projects in their application.

(ii) The selection of JRFs will be on the basis of a National Test (Written & Personality Test by interview), conducted by the Institute. Details of the National Test will be sent to applicants after the screening of applications. The screening criteria will be academic merit, subject relevance, physical fitness, aptitude for outdoor work in different terrain and nature/environmental work. The candidates shortlisted on the basis of such screening will be called for the National Test.

(iii) Candidates, if selected, will be encouraged to register for M.Phil./Ph.D.

B. Research Associateships – Three; Selected candidates will be fixed at a consolidated amount within one of the four slabs depending upon qualifications, experience and performance in the interview:

1. Rs. 2200-100-2700
2. Rs. 2700-100-3200
3. Rs. 3200-100-3700
4. Rs. 3700-125-4325

They will not be entitled to D.A., C.C.A., H.C.A., Bonus, L.T.C., Retirement benefits. Other requirements of the associateship are given below:

Project-RA/1 "Standardisation of laboratory techniques for ecological and wildlife applications"

Essential Qualifications: Ph.D. in Life Sciences/Botany/Zoology/Biochemistry/Physiology.

Desirable Qualifications: Having adequate experience of using advance analytical laboratory techniques in a reputed laboratory.

Project-RA/2

"Application of Biostatistics and computers in ecological/wildlife research"

Essential Qualifications: Ph.D. in Life Sciences/Statistics/Biostatistics/Mathematics.

Desirable Qualifications: Having adequate experience in using advanced computer software/hardware in biological/ecological research.

Project-RA/3

"Application of remote sensing/GIS (Geographics information system) in Wildlife Research".

Essential Qualifications: Ph.D. in Life Sciences/Earth Sciences.

Desirable Qualifications: Have obtained Certificate/Diploma in Remote Sensing Application from Central/State Govt. owned Remote Sensing Institute. Having experience in using GIS technology.

General:

Age: Research workers preferably below the age of 40 years (relaxable in the case of candidates belonging to SC/ST upto 5 years).

Period of Associateships: Initially for a period of three years another term not exceed two years

How to apply: Applications in the prescribed form (Annexure-1), given below, duly completed, by the candidates alongwith copies (not originals) of necessary certificates/testimonials should reach the Director, Wildlife Institute of India, P.O. New Forest, Dehra Dun - 248 006 (U.P.) **within 20 days from the date of its publication.** Application should be sent by Registered Post in a marked envelope "Application for Junior Research Fellowship/Research Associate". Candidates already in some employment should send, applications through proper channel. However, advance copy must reach to Director, WII before the closing date.

ANNEXURE-1

APPLICATION FORM FOR THE JUNIOR RESEARCH FELLOWSHIP RESEARCH ASSOCIATESHIP

Category: General/SC/ST/Physically Handicapped (please indicate on top).

1. (a) Name of the applicant, designation and full address: ....

....

....

(b) Present Residential Address ....

....

(c) Permanent Address ....

....

(d) Nearest Rly. Station for undertaking the Journey ....

2. Date of birth .... Age as on 15 October, 1990.
Years .... months ....

3. If belonging to Scheduled Castes/Scheduled Tribes, State name of the Caste/Tribe ....
A photostat copy of the Original caste certificate issued by competent authorities may be attached.

4. (a) Academic Achievements:-

Examination Passed	Year	University	Subject	Division with percentage of marks or grade along with copies of mark sheet & certificate	Encl.
Higher Secondary					
Bachelor Degree					
Master's Degree					
Ph.D./Equivalent Examination					

(b) Creative Achievement (State briefly your biodata as a research worker/giving details of research papers, participation in Seminar, Symposium, Conference etc.)
....
....
....

5. Have you had any scholarship/fellowship before applying for this award? (If so, please give its source, the period & details of work done under that award) ....

Name of the Scholarship	Awarding Agency	Period From	Period To	Amount

6. Employment held so far (up to date):

Name of the Employer	Position held	Period From	Period To	Emoluments per month

7. Research publications, title of the publication, year of publication, journal etc. may kindly be indicated (Reprints may be enclosed).

8. Title of Ph.D. thesis, name of the guide and an abstract of Ph.D. thesis in about 500 words (in a separate sheet) may be submitted (Applicable only for RAs).

9. Order of preference for the advertised projects (mention No. and name of the project).

10. Name and Address of three persons in University/Research Institute actively engaged in some areas of research to whom a reference could be made:
1.
2
3.

11. Certified that:

(a) I do hereby undertake not to receive any financial assistance from any agency, whatever on the selection and accepting WIIs Fellowship/Associateship.

(b) I agree to abide by the WII rules meant for JRFs/SRFs or RAs.

(c) I shall submit an undertaking regarding the acceptance of conditions of award at the time of accepting the fellowship.

(d) Information furnished above are correct to the best of my knowledge.

Place:
Date: ....
(Signature of the Applicant)

INDIRA GANDHI INSTITUTE OF PHYSICAL EDUCATION

BLOCK-B, VIKAS PURI.
DELHI-18.

Applications are inviting for the post of Principal in the pay scale of Rs. 4500-7300.

QUALIFICATIONS:

ESSENTIAL:

(i) Good academic record with at least second class (C in the seven point scale) Master's degree in a relevant subject from an Indian University or an equivalent degree from a foreign University with Doctor's Degree or equivalent published work and teaching experience of degree classes of not less than 10 years or

(ii) Good academic record with at least second class (C in the seven point scale) Master's Degree in a relevant subject from an Indian University or an equivalent degree from a foreign University with teaching experience of degree classes of not less than 15 years.

DESIRABLE

Administrative experience in a recognised institution teaching Degree Classes or above.

EXPLANATION

1. For determining "good academic record" the following critaria shall be adopted:
   (i) A candidate holding a Ph.D./M.Phil. Degree should possess at least a second class Master's Degree; or
   (ii) A candidate without a Ph.D./M.Phil. Degree should possess a High Second Class Master's Degree and second class in the Bachelor's Degree; or
   (iii) A candidate not possessing Ph.D./M.Phil. Degree but possessing second class Master's Degree should have obtained first class in the Bachelor's Degree.
   (iv) In the case of post of Principal, Physical Education, teaching experience will include teaching or practical experience in field of Physical Education of not less than 15 years.
2. Persons having secured at least 55% or more marks shall be deemed to have passed the examination in the high second class.

The last date of submission of application is **9th Oct., 1990.**

Chairman
BOARD OF GOVERNERS

HIMACHAL PRADESH UNIVERSITY 'RECRUITMENT BRANCH'

Advertisement No. 4/90

Applications are invited (on prescribed form) for the following teaching posts, so as to reach the **Assistant Registrar, Recruitment Branch, H.P. University, Shimla-171005,** alongwith a crossed Indian Postal Order of Rs. 20/- (Rs. 10/- for S.C./S.T.) payble to the Finance Officer, HPU by **October 26, 1990:**

I. PROFESSORS: (Pay Scale: Rs. 4500-7300) in the following subjects of the teaching Deptts.

Business Administration-1.

Botany/Zoology-1 (Leave vacancy for about one year).

II. READERS: (Pay Scale: Rs. 3700-5700) in the following subjects of the teaching Deptts.

English-1 (Leave vacancy for about one year)

Law-1 (Leave vacancy for about one year)

CEED 91

Common Entrance Examination for Design

Entrance Examination for
Master of Design (M. Des)
two year programme at
Industrial Design Centre, IIT, Bombay.
1991-92 Admissions

Eligibility

Bachelor's degree in Engineering (any branch), Architecture, BFA (Applied Art), Art/ Design, GD Art (5 years) or Diploma of NID

* Candidates may appear for either CEED or GATE. All those admitted are eligible for postgraduate scholarship

For Application material please send two 5x10 cms slips with your address written neatly and a demand draft for Rs. 40 drawn in the favour of Indian Institute of Technology, Bombay and payable at Bombay to :
Chairman , CEED c/o GATE Office
Indian Technology, Bombay 400076
Ph : 514 4145

Test will be held on 17 Febuary 1991 at Bombay, Delhi, Kanpur, Kharagpur, Madras and Bangalore.
Issue of forms :
30 October to 16 November '90.
Last date to receive application forms
4th December 1990

Master of Design (M. Des) in Industrial Design:
Industrial Products, Consumer products, Automobiles, Ceramics, Exhibitions
Visual Communication:
Graphic Design, Typography
Photography, Audiovisuals, Video, Animation, Computer Graphics.

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

School of Biomedical Engineering

BIOMEET '91

(Biomedical Engineering Entrance Test)
for
Medical Graduates seeking admission with Scholarship
to
M. Tech/Ph. D Programme in Biomedical Engineering

Eligibility	MBBS degree holders and those undergoing internship having knowledge of Mathematics (XII Std.)
Application	Forms and information brochure can be obtained by post from Chairman, GATE, Indian Institute of Technology, Powai, Bombay 400 076 by enclosing two 5x10 cms slips with your address written neatly and a crossed draft of Rs. 40/- drawn in favour of Indian Institute of Technology, Bombay and payable at Bombay.
Examination Centres	IIT Bombay, IIT Delhi, IIT Kharagpur, IIT Madras, IISc Bangalore
Dates	Issue of forms: 30th Oct. '90 to 16th Nov. '90 Examination : Sunday, 17th Feb. '91 **Last date to receive application forms 4th Dec. 1990.**

Note

1. Candidates from engineering and physical sciences should appear for GATE for admission to the above programme.
2. Besides qualifying through BIOMEET/GATE, the candidates must satisfy other requirements before admission.

III. LECTURERS: (Pay Scale: Rs. 2200-4000) in the following subjects of the teaching Deptts.
Mathematics-3
Business Admn-2 (One temporary but likely to continue)
Bio-Sciences-1 (Spl. in Microbiology) (Leave vacancy for about one year).
Political Science-1 (Leave vacancy for about 4 years).
For Directorate of Correspondence Courses:
English-1
Sociology-1
Mathematics-1

For H.P. University Evening College, Shimla.
English-1 (Leave vacancy for about 2 years)

IV. PROJECT OFFICERS-2 (Pay Scale: Rs. 2200-4000) in the Deptt. of Adult & Continuing Education.
(U.G.C. Project posts)

The qualifications for the above mentioned posts are the same as per U.G.C. guidelines and adopted by this University from time to time.

Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees, and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied formally.

The University also reserves the right to fill up or not to fill up the post/s or to call only suitable candidates for interview. The number of posts likely to be filled may vary.

As per University rules, 15% and 7 % posts of **Lecturers** will be reserved for Scheduled Castes and Scheduled Tribes candidates respectively.

Application form alongwith detailed qualifications can be obtained from the **Assistant Registrar, Recruitment Branch, H.P. University, Shimla-171005,** personaly on payment of Rs. 5/- or by making a written request to him accompanied by self-addressed envelope of 23 × 10 cms. with postage stamps affixed worth Rs. 2/- and a postal order of Rs. 5/- drawn in favour of Finance Officer.

NOTE:

(i) Applications received on plain paper, applications not in conformity with the requirements as specified in the applications form and application received after the last date will not be entertained and no correspondence will be entertained in this regard.

(ii) A person applying for more than one post should send a separate application for each post.

(iii) Persons who have applied earlier in response to Advt. No. 5/89, dated 6.5.1989 for the post of Reader in Law(LV), Advt. No. 7/89, dated 13.7.1989 for the posts of Lecturers in English, Sociology for D.C.C., Advt. No. 8/89, dated July 27, 1989 for two posts of Project Officers, Advt. No. 9/89, dated 31.7.1989 for the posts of Professor in Business Administration, Professor in Botany/Zoology(LV), Reader in English(LV), Lecturer in English(LV-HPUEC, Shimla), and Lecturer in Business Administration, need not to apply again. However, they may send additional informations, if any.

A.R. Chauhan
REGISTRAR

CENTRE OF ADVANCED STUDY IN PSYCHOLOGY

UTKAL UNIVERSITY, VANI VIHAR, BHUBANESWAR-751 004.

Vacancies:

A) JUNIOR RESEARCH FELLOW: TWO CAS PROGRAMME)

Eligibility: M.A. in Psychology, U.G.C. National Test.

Terms & Conditions as per U.G.C. rules.

Last date: October 20, 1990 for complete application form available from the undersigned.

K. Jachuck
CO-ORDINATOR

NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE & TECHNOLOGY

ITANAGAR: ARUNACHAL PRADESH

ADVERTISEMENT NO. 4/90

Excellent career opportunities exist in various fields of engineering and science at NERIST—an Institute set-up by the Government of India through the North Eastern Council. The Institute offers under-graduate programmes in Applied Science & Engineering/Technology. It is envisaged shortly to start post-graduate programmes leading to Master and Ph.D. degrees.

Applications on prescribed form are invited from the Indian citizens for the following faculty positions, upto **30.11.90.** Persons employed in Government, Semi-Govt. and Educational Institutions should apply through proper channel. The posts carry allowances such as DA, CCA, rent-free accommodation, special compensatory allowances etc. as are admissible to Central Government employees stationed at Itanagar from time to time. Depending on the qualifications and experience, a higher salary may be offered. Also a candidate not found suitable for the post he/she has applied may be considered for a lower post. Pay-scale and upper age limit immediately follow the name of each post.

1. PROFESSORS (i) Horticulture, (ii) Forestry, (iii) Chemistry (iv) Mathematics, (v) Physics.
Rs. 4500-150-5700-200-7300/- PM, Age: 50 years

EQ: Excellent academic record with Doctorate in the appropriate field from a recognised University/Institute, minimum 10 years of experience in teaching/research/industry and specialised knowledge in one or more fields. Professional work of outstanding merit and experience of carrying out independent research and guiding research are desirable.

Candidates not possessing Ph.D. may also considered if they have to their credit equivalent published research work or design and development work of high standard either in an Institution or in any Industry.

2. ASSISTANT PROFESSORS: (i) Horticulture, (ii) Forestry, (iii) Physics

Rs. 3700-125-4950-150-5700/- PM. Age: 45 years. **EQ:** A consistently good academic record with a Doctorate in the relevant field. About 5 years experience in teaching and/or research and development. Candidate not possessing Ph.D. may also be considered if they have to their credit equivalent published work of high standard either in an Institution or in an Industry.

3. LECTURER: (i) Horticulture, (ii) Forestry, (iii) Physics

Rs. 2200-75-2800-100-4000/- PM, Age: 40 years. **EQ:** A consistently good academic record with Doctorate degree in relevant field of Applied Science/Science. About one year experience in teaching/research/industry. Candidates not possessing Ph.D. may be considered if they have to their credit equivalent published work of high standard.

For the application forms write to Deputy Registrar (Administration), NERIST, Naharlagun-791110, Arunachal Pradesh with a fee in crossed Indian Postal Order for Rs. 7.50 payable to Director, NERIST, Naharlagun (Rs. 2.50 for SC/ST candidates). Candidates from abroad may apply on plain paper.

Age and experience is relaxable as per the prescribed norms in the case of SC/ST and other exceptional cases.

Applications completed in all respects along with attested/photocopies of the certificates/testimonials should reach to the Deputy Registrar on the above address on or before **30-11-90** by registered post only. Incomplete application and applications received late will not be considered.

P.G. Nair
DEPUTY REGISTRAR (ADMN)

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C.F.T.R.I., MYSORE

University News

MONDAY, OCTOBER 8, 1990 Rs. 2.50

Association of Indian Universities

65th Annual Meeting
October 8-10, 1990

Venue: Pranjivan Vidyarthi Bhavan, Gujarat Vidyapith. Foundation stone laid by Shri P.C. Ray in 1920 and the Bhavan opened by Gandhiji in 1925. Gandhiji stayed here several times as the life-long Chancellor delivered 10 convocation addresses in this building.

Information Service to Researchers in Universities

The National Centre for Science Information (NCSI) offers upto date, computerised information services to the faculty members and researchers in Indian Universities and Colleges *free of charge*. Operating since 1984 from the Indian Institute of Science, Bangalore, the Centre has been set up by UGC. Its staff consists of computer scientists, information scientists and support personnel. Besides its own minicomputer facility, the Centre has access to the IISc DEC 1090 mainframe computer system. NCSI has arrangements with the world's leading abstracting services to regularly receive their database updates on magnetic tapes.

A researcher enrolled for this service will regularly receive abstracts of recently published literature pertaining to his area of research. This includes journal papers, conference proceedings, books, patents, technical reports, meetings, reviews, etc. Besides the abstract, each computer printout contains details of author, title, source, reference, author address, etc

The areas covered by the service are:

Physics: All areas of Physics, Electrical & Electronics Engg., Computers and Control and Information Technology—From INSPEC-I (IEE, UK) Database covering 'Physics Abstracts', 'Electric & Electronics Abstracts' & 'Computer & Control Abstracts'; **Chemistry:** Biochemistry, Organic Chemistry, Macromolecular Chemistry, Applied Chemistry, Chemical & Physical Engg., Inorganic and Analytical Chemistry—From CA-Search (Chemical Abstracts Service, USA) database covering 'Chemical Abstracts'; **Mathematics:** Statistics, Numerical Analysis, Fluid Mechanics and related fields like Relativity, Astronomy, Astrophysics, etc.—From MATHSCI (American Mathematical Society, USA) database covering 'American Mathematical Reviews'; **Life Sciences:** General Biology, Basic Medical Sciences, Micro-biology, Immunology, Public Health and Parasitology, Plantology, Sciences and Animal Sciences—From BIOSIS (Bioscience Information Service, USA) database covering 'Biological' Abstracts'; **Geology:** All aspects of Geology, Minerology and Crystallography, Hydrology and Geophysics—From GeoRef (American Geological Institute, USA) database covering 'Bibliography & Index to Geology'.

Software has been developed at NCSI to scan the database update tapes on a computer and to select abstracts that match the "User Profile". The profile of an user is constructed using keywords supplied by him/her at the time of enrollment. Through regular user feedbacks, these profiles are periodically updated to precisely match the user interests.

Currently the Centre has on its mailing list more than 2,000 scientists working in Universities and Institutions of higher learning all over the country and engaged in research in different areas of science.

If you are a researcher in any University or College, and wish to become a user of this *free service*, you may make your request for a 'Profile Information Sheet' to: Prof. V. Rajaraman, Chairman, National Centre for Science Information, Indian Institute of Science, Bangalore 560 012.

ASSOCIATION OF INDIAN UNIVERSITIES

16, Kotla Marg, New Delhi-110002

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UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

The Role of Vice-Chancellors in Indian Universities

Prof. Sarup Singh, the Governor of Kerala and former Vice-Chancellor, University of Delhi, delivered the first Prof. U.N. Singh Memorial Lecture organised by the University of Delhi. Lucidly written and full of wisdom arising from experience and reflection, the lecture is being carried in full for a wider audience.

I regard it an honour to be invited to deliver the first Professor U.N. Singh Memorial Lecture. He was not only a colleague of mine for many years at Delhi University but also a close personal friend. For me, therefore, it is a matter of special gratification that I am given a chance to pay a public tribute to his memory. He was my next door neighbour and I had opportunities of knowing him very intimately. In various ways, I regarded him as an exceptional man. He was a man of wide culture and had profound commitment to moral values. His character had clearly been shaped by the cultural heritage of Banaras and Allahabad.

The real test of his intellectual stature and moral commitment to values came when he was called upon to accept the Vice-Chancellorship of Allahabad University. At that particular point of time, Allahabad University was passing through a turbulent period in its history. The scene on the campus was chaotic. Cases of violence and blatant cheating in examinations were accepted as normal facts of life on the campus. Mass copying had assumed shocking proportions. Physical assault on teachers was quite common and there was literally a reign of terror on the campus. A former Vice-Chancellor happened to visit the University and he was kicked in broad day-light by a so-called student with no one to protect him. A girl's modesty was violated during working hours in the hostel and yet no action of any sort could be instituted.

Dr. Singh was a very gentle, soft-spoken and mild-mannered man and not many people would have expected that he would be able to make any impact on the situation. But some of us in Delhi had seen that he was also a man of exceptional courage and when aroused, he could face almost anyone. So the first thing he did was what any intelligent Vice-Chancellor should do. By his personal example, he galvanised the teachers of the University into action. The University Teachers Association took a determined stand against violence and use of unfair means in examination. But things were not easy. Teachers were threatened and Dr. Singh himself was gheraoed for 27 hours. When the police was called in, some students locked his office and even threatened to murder him. The teachers stood by him and refused to teach unless students behaved. Finally the University succeeded in passing stringent measures to punish students for malpractices in examinations and violation of University discipline. The struggle was long and strenuous but finally the University succeeded though only after some students had been rusticated and some others were debarred from going to the next higher class as it was established in their case that they had used unfair means in the examination.

Any Government should have thanked Dr. Singh and his colleagues for the miracle that they had achieved. But what did the U.P. Government do? As the son of an important state politician had also been rusticated, the Governor was approached and he, as Chancellor of the University, reversed the decision of the University. The incensed members of the faculty immediately went to the High Court but the High Court refused to interfere with the Chancellor's action though it did give him ample hints that he might reconsider his order. When all this was going on, politicians got extra-active, broke the solidarity of the teaching community and raised casteist question so that the real issue could be blurred. The Government found this an excellent moment to institute an enquiry committee to go into all complaints, including the complaint of a temporary class IV employee who had been suspended for misconduct sometime earlier. In a sense this was an enquiry into the Vice-Chancellor's conduct.

Dr. Singh's reaction was immediate and sharp. He raised the question of the University's autonomy and wrote in his resignation letter: "If the University cannot punish a temporary Chowkidar guilty of dereliction of duty without the Government questioning that action; if the authorities cannot expel violent anti-social elements without being humiliated by an uncalled for, ill conceived enquiry, Sir, I beg to submit that no self-respecting person can function as the Vice-Chancellor. Therefore, I hereby tender my resignation".

The most unpleasant feature of our political culture is that it has no respect for University autonomy and it distrusts academic freedom. The Indian Universities were modelled by the British on the pattern of London University as it then was and the essence of this pattern was that a University is a Corporation of scholars, teachers and students with academic freedom and autonomy as its distinguishing features. Although in the early years, the British Government in India had to tend and direct the new, transplanted institutions, it, by and large, respected the self-governing character of Universities. Even in the worst of times, the British were reluctant to violate the sanctity of the campus. At the first Conference of Indian Universities held in Simla in 1924, Lord Reading, the then Viceroy of India, gave the assurance that "there is not the slightest disposition in any quarter to interfere with or detract or subtract in any manner whatsoever from the autonomous or self-governing powers possessed by the various Universities". The view clearly was that education could be properly imparted only in an atmosphere where no pressure was put either on teachers or on students by outside forces, whether political or social.

In his report on Higher Education in Britain, Lord Robbins has said: "Freedom of institutions as well as individual freedom is an essential constituent of a free society and the tradition of academic freedom in this country has deep roots in the whole history of our people". He, of course, recognised that since Universities are largely financed by the Government, Government may be tempted to interfere with their functioning in the name of efficiency, financial or otherwise. He, however, asserted: "We are convinced .... that (academic) freedom is a necessary condition of the highest efficiency and that encroachments upon their liberty, in the supposed interests of greater efficiency, would in fact diminish their efficiency and stultify their development". (p. 229). About the freedom that the University system should grant to the individual teacher, Lord Robbins said: "For the individual teacher academic freedom means the absence of discriminatory treatment on grounds of race, religion and politics, and the right to reach according to his own conception of fact and truth, rather than according to any pre-determined orthodoxy. It involves, further, freedom to publish, and, subject to the proper performance of allotted duties, freedom to pursue what personal studies or researches are congenial". Lord Robbins recognised that "freedom of this sort may sometimes lend itself to abuses" but he was convinced that "the danger of such abuses is much less than the danger of trying to eliminate them by general restriction of individual liberty" (p. 229).

The earlier generation of Indian politicians was equally committed to autonomy and academic freedom in Universities and it fostered them in various ways. Pandit Nehru himself was quite sensitive on this question and he often propagated the idea that Universities should be allowed to function in an atmosphere of freedom without any political pressure from outside. In an address to the University of Allahabad, he said: "A University stands for humanism, for tolerance, for reason, for progress, for the adventure of ideas and for the search of truth". He was, however, quite conscious that these values cannot be pursued "if the temple of learning itself becomes a house of narrow bigotry and petty objectives". He, therefore, advised those who "guide" the "destinies" of Universities "to keep their lights burning and ..... not stray from the right path even when passion convulses the multitude and blinds many amongst those whose duty it is set an example to others". Pandit Nehru in fact expected the state itself to be the guardian of autonomy and freedom in the Universities so that they could function as the home of culture and of learning without being hindred in their task by the narrow caste or communal loyalties which often determine the attitude of politicians.

Today, I am sorry to say, the situation has almost completely changed. The view now is that since the finances come from the Government, the Government has every right to dictate to the Universities in all matters. Some of us who have worked in Central Universities have no clear notion of what is happening in State Universities. At one time the Governors who are Chancellors of the State Universities were all powerful in the matter of the choice of Vice-Chancellors. The situation now is quite different. In some states, Chancellors may still appoint Vice-Chancellors of their choice after consulting the Chief Ministers but in quite a few states the Chancellors have been reduced to ciphers and they have become merely signing machines. In West Bengal and Andhra Pradesh, for instance, the State Legislatures have officially decided that the Chancellor has no power to appoint a Vice-Chancellor and that all that he has to do is to give his assent to the choice of the Government. In a sense this is a more honest way of dealing. In States where Chancellors still have the statutorty right to appoint Vice-Chancellors, the situation for a Chancellor can become very difficult in the event of disagreement between him and the State Government. In some cases it may even lead to the Governor resigning his office. I am not exaggerating. After all, in a situation where every office has lost its dignity, owing to the challenge to every convention by the representatives of the people, how could the office of the Governor escape the onslaught of democratic forces? The Governor's conduct is not normally discussed in the State Legislature but his conduct as Chancellor can certainly be discussed and condemned. Moreover, any decision taken by the Governor in his capacity as Chancellor can be challenged in Court of Law. The Governor who is just an outsider imposed on the State by the Central Government has got to be very careful lest he should become too controversial. Otherwise how does it happen that a State Government decides to dismiss all the Vice-Chancellors in the State and the Governor quietly issues the Ordinance?

Even the Central Universities are no longer the autonomous institutions that they used to be at one time. Some years ago when I was a member of the Rajya Sabha, the Minister of State for Education tabled a motion before the House suggesting that the Statutes, Ordinances and regulations (including, of course, the audited reports) of the Central Universities should be discussed in the House. Dr. Malcolm Adiseshaiah and I tried hard to convince the House that this would be a gross encroachment on the autonomy of the Universities and further politicize the Universities. Surprisingly, we got no support from any section of the House. We discovered to our sorrow that on education all political parties hold equally enlightened views! I do not know what finally happened to the legislation as I soon ceased to be a member but I told one or two members belonging to a minority community that Delhi University could survive any discussion but their University which had recently obtained minority status might feel embarrassed. That may have perhaps deterred the Government of India from proceeding further in the matter. But I do not know.

Looking at the existing situation on the ground, the time has come when we should seriously consider whether the Acts of the various Universities and the Constitutions under which they are functioning need changes. In certain States, they make the smooth functioning of the University almost impossible. The University Syndicate and Senate are so constituted that the lay, i.e. non-academic element outnumbers the academic element. This lay element is democratically elected and they come from various sections of the population including trade unions and Panchayats. They have their own political affiliations and they come to dominate Universities to such an extent that often they start interfering with admissions, appointments and promotions. Teachers who agitate for democratization need to be reminded that democratization would not end with teachers capturing power in the Universities but that the power would go where it belongs in a democracy i.e. the people. An example from a State University may be sufficient to pinpoint the dangers. Recently a powerful member of the Syndicate of a State University insisted on the suspension of a teacher and inspite of the Vice-Chancellor's plea that a teacher could not be suspended unless a proper show-cause notice was served on him etc., the Syndicate agreed with the member and the teacher was suspended. He, of course, went to the High Court and obtained a stay order but the harm that a decision of this sort can cause to the morale of the members of the faculty is incalculable. It is clear that when non-academic people do not identify themselves with the University and its objectives, the University cannot function as an autonomous academic institution. In India it has become common for some members, both academic and non-academic, to act as a perpetual "opposition" in the Councils of the Universities and this leads to a constant state of tension and conflict. There are times when University authorities have to seek the intervention of the Government to protect itself against the onslaught of agitators, whether students or teachers or others. When this happens the cry goes out that the Government is encroaching on the autonomy of the University. Does it not occur to the leaders of teachers and students that they themselves are endangering the autonomy of the University? If the University people cannot look after their institution, someone else will, and that someone else will be the Government and the politician. Perhaps no where else in the world is there such a large degree of lack of cohesion within the governing bodies of Universities as there is in India.

In addition to the harm that this lack of cohesion does to academic standards in Universities, finally its chief victim is the Vice-Chancellor. Unfortunately most Governments in the states are totally indifferent to it as is seen in the casual way they treat the question of the appointment of a Vice-Chancellor. The normal practice is that instead of planning ahead, they leave this question undecided till a Vice-Chancellor retires and then hurriedly they ask one of the I.A.S. officers to look after the affairs of the University in addition to his own official responsibilities. This suits the I.A.S. lobby eminently and they see to it that such arrangement continues for years. It never occurs to the decision-makers, as the Kothari Commission Report pointed out, that "the character of a University as a society of teachers and students engaged in the pursuit of learning and discovery," is fundamentally different in the "regulation of its affairs from, say, the profit-motivated management of commercial or industrial concerns or the administration of a Government Department, a Municipal Corporation or a unit of the armed forces". According to the Commission, "the person who is expected, above all, to embody the spirit of academic freedom and the principles of good management is the Vice-Chancellor. He stands for the commitment of the University to scholarship and pursuit of truth and can ensure that the executive wing of the University is used to assist the academic community in all its activities". The Government, however, has neither the time nor the understanding of the needs of the Universities and in our present political climate it seems as if Universities are no one's concern. Naturally no one seems worried about the choice of a Vice-Chancellor. And yet as someone reminded Britain some years ago, Britain was doomed to become a third-rate power not because of its loss of the empire, but because of its declining educational standards in Universities. One way to prevent this decline, Lord Robbins said in his famous report on Higher Education, was to provide a proper leadership to the Universities. It was, however, no easy task to find suitable persons to head Universities. According to Lord Robbins, "No other enterprise imposed on its Chairman the variety and burden of work that the modern University requires of its Vice-Chancellor" He indeed described it as "a quite insupportable burden".

Have we given any thought to this? Have we cared to find out that once we have appointed a Vice-Chancellor, we should also create conditions in which he can function?

Most Vice-Chancellors accept the office in full recognition of the fact that it is an extremely difficult assignment. Some of them are optimistic enough to believe that they can improve the existing conditions. They also possess idealism and they hope that they can foster a new work culture in their colleagues, raise the quality of teaching and research and make the University a genuine centre of learning where every one is engaged in pursuit of excellence. For sometime they get the feeling that they are succeeding but the period of euphoria soon passes and then they realize that they will have rendered enough service to the University if they can prevent further decline and preserve the status quo. That happens precisely because they find that their entire time is taken up in fire-fighting.

Why have we reached this impasse? It is, of course, true that the student revolt of late sixties and seventies weakened our University system quite considerably. It is, however, worth remembering that most Western countries also faced this revolt but they took steps to see that their standards did not fall. Indeed, they prepared themselves to face the new challenges that were being thrown up by the explosion of knowledge. They made necessary adjustments not only in their managerial structures and strategies but also in the improvement of skills both at the level of teaching and of research. In India, however, the damage caused to academic standards and to discipline during that period has become a permanent feature of University life. Its effect is seen at its worst on our academic administrators. Most of them have lost their initiative as today almost any group of students feels confident that it can bring the University to its heels. Some years ago, the Madhuri Shah Committee on the Working of Central Universities had stated that "hardly a week passes in the country when the newspapers do not carry some news or the other about disturbances in the Universities including the Central Universities". Things may have changed somewhat but I am not altogether certain about the attitude of students. Strikes, gheraos and closures of Colleges and Universities are still quite common. According to one estimate, "about one-third of the Colleges and even Universities remain closed at one time or another because of disturbances of some type or other".

The answer to the question as to why some other countries were able to recover from the shocks received during the student revolt and India failed to do so is not to be found in the Universities but outside. It is indeed to be found in the deterioration of our political culture. The chief culprits clearly are our political parties. This is how a former Vice-Chancellor of Cochin University, Prof. M.V. Pylee, has stated the problem: "Colleges and Universities are crowded with activists of political parties, big and small, who threaten and blackmail ordinary teachers, students and administrators. An honest student's life has become risky. A conscientious teacher is afraid to perform his duties. Caste and communal considerations dominate the entire structure of College and University administration. Appointments of teachers are largely decided on caste or graft or on both. Examinations assume proportions of a battle in which those responsible for conducting them face all kinds of threats even to their lives if they try to stop or even interfere with the malpractices. Anti-social elements invade examination halls and disrupt their smooth conduct. Sections of students have now even started demanding as a right freedom to copy in examinations".

In such a situation it is natural that academics who have attained some real fame as scholars should be reluctant to accept Vice-Chancellorship. Unfortunately Vice-Chancellorship offers no attractions of any sort to such scholars. The minimum that the Government or the UGC could have done was to considerably improve their salary scales and also evolve a pension scheme for them. They could also be provided some special privileges. Even the car that a Vice-Chancellor is allowed to use is only for official purposes, and when it is used for personal purposes, the Vice-Chancellor is required to pay at the market rate for the journey undertaken. At least that was the situation when I was the Vice-Chancellor. In sheer material terms, a Professorship is any day better than a Vice-Chancellorship, specially in the case of scholars who are in demand at home and abroad. In these circumstances, we have to search for that special kind of scholar who, though recognised in his own area of specialization, has both a flair for administration and also a social conscience which urges him to help university life at a time when so much is at stake. Such a man is very rare and we should prize him.

Some years ago, a proposal was informally mooted that the University Grants Commission might prepare a list of such persons for appointment as Vice-Chancellors. This was intended to be an All-India list and it was to be continuously updated. It was expected to include persons from all Universities and Research Institutions and reflect all disciplines. The intention was that all Universities could draw from the list and choose really competent academic administrators. The unstated assumption was that the persons selected should not be political appointees of the State Governments or of the Central Government but academics who inspire confidence and trust amongst their peers. It was also assumed that wherever possible persons from outside the state might be brought in so that there was no caste or communal nepotism. The idea did seem attractive but in our existing situation it should have been clear to all that it would not be accepted.

On one point, however, we need to agree if University education is to be saved. The tendency of Governments to put inferior people in positions of leadership in Universities due to caste, communal or political considerations must be somewhow curbed. Both the Central Government and the UGC can help in this matter if they themselves can rise above narrow considerations and show some firmness. We need to remember that where a University is saddled with an inferior Vice-Chancellor, it would cease to function as a centre of learning and it could hardly be expected to encourage quality teaching or research. However hateful the word may sound, all higher education is elitist in character as it is in essence a pursuit of excellence. Those who attack elitism need to make a distinction between intellectual excellence and social snobbery. We should in any case beware of the dangers of mediocrity in higher education. Where a University does not keep higher standards of scholarship in mind, it fails in its duty. Where a nation's Universities do not produce outstanding men and women in various disciplines, the nation will deteriorate. When badly educated men and women with a low culture and a narrow outlook become the guardians and rulers of the nation, then that nation is in real peril.

In the case of Dr. U.N. Singh it were such rulers who were in power. They sent him messages that it was in his interest not to take action against a particular student simply because he was so and so's son. They also gave threats. When they failed, they offered rewards for loyalty. All methods were the usual methods of small politicians—cajoling, offering bribes, threatening. When an inferior man is appointed as Vice-Chancellor, the real danger is that he would do some real damage to the University for personal survival or personal benefit. Some decisions can be fatal for the character of a University and it has been seen, particularly in recent years, that the lure of political benefits can make a man totally blind to the harm that his decision may cause to the University. I know some cases where a permanent damage was done to the University because the Vice-Chancellor wanted to secure an extension of his term. His decision almost crippled the University but such men can never think beyond their own selves.

Dr. Singh's example at Allahabad can serve as a reminder to all Vice-Chancellors. Either perform your duty honourably and in the best interests of the University, he says, or you resign rather than damage the University through an ignoble compromise. I quote from his resignation letter to the Chancellor:

"Moments arise in the lives of institutions when individuals, no matter how high a position they may occupy, are irrelevant. Such historic moments demand searching analysis of the causes leading to the crisis, and fearless and decisive action. Only thus do institutions survive the test of time. Such a moment of reckoning, I believe, has now arrived for this great seat of learning. In this moment of trial I desire to live upto my duties towards it, guided by the wisdom of which I am capable"

This paragraph from Professor Singh's resignation letter deserves to be made compulsory reading for all Vice-Chancellors in Indian Universities as only a man of Professor Singh's exacting moral standards could make it. Here is a man who is not worried about his personal position; indeed his personal position is irrelevant. He is willing to sacrifice it in order to save the University from disaster. That demands personal sacrifice and he would make it so that his University can survive. To forget one's self-interest and to think only of the institution that one is serving is not easy. But, as he says, he has to "live upto his duties". In moments of crisis the main duty of a Vice-Chancellor is to sacrifice himself. How many of us can take such a stand? We are all mighty fellows but self-sacrifice is often not our cup of tea.

But I want to ask whether it is fair on the part of a society to demand such self-sacrifice from its Vice-Chancellors. The politicians may not care to answer this question. They are in any case too busy in their own attempts to survive. The question has to be answered by those who have adopted education as a profession. It must be clearly understood by all that education in its deepest meaning requires an orderliness of behaviour on the part of all concerned and an atmosphere of peace and mutual respect. Where these conditions do not exist neither teaching nor learning can effectively take place and the University ceases to be a place where character is formed, attitudes shaped and minds enriched. Whether they like it or not, it must be stated that the greatest enemies of the Universities are not always the politicians outside but the politicians inside the Universities. Professional agitators in Universities, whether they are teachers or students, and whether they belong to any political party or not, are the real enemies of Universities. Who shall fight them and defeat them? Neither the Vice-Chancellor nor the police can really handle them effectively. These elements can be effectively handled only by those teachers who are keen to teach and those students who are keen to learn. Each unit in the University—whether it is a College or Department—must have a Committee comprising senior students and teachers which should have law and order authority vested in them to ensure peace and harmony on the campus. Here the assumption is that all problems of law and order have to be resolved at the local level and they cannot just be thrown into the lap of the Vice-Chancellor. In a University like Delhi, for instance, no problem from a College or a Department which is a purely law and order problem should reach the Vice-Chancellor. The Principal of the College or the Head of the Department or the Dean of the Faculty, as the case may be, has no right to abdicate as I have often seen happening. Indeed, constitutionally, the power to punish should belong to the Head of the College or the Department and not the Vice-Chancellor. The main function of the Vice-Chancellor is to ensure that the University gets all the facilities it needs to perform its functions well. Hence it is his function to deal with the UGC or the Government and secure from wherever he can whatever assistance the University needs. Lord Robbins was, of course, talking about British Universities but with necessary modifications I find his comments on the duties of a Vice-Chancellor very relevant. "There are certain duties", he said, "of which the Vice-Chancellor cannot divest himself. He is at once a member of the governing body and the Chairman of the main academic councils. He must therefore be at the centre of all discussions involving broad questions of internal policy or relations with the outside world. He must represent his institution in all formal or informal relations with the UGC; he must be present at meetings of the Committee of Vice-Chancellors; he must keep in touch with potential benefactors, and he must be aware, in general, of developments in the various branches of learning". Lord Robbins also suggested, depending on the needs of each University, "appointment of permanent Pro-Vice-Chancellors .... or committees of senior academic and administrative staff". He concluded this portion of his report with the following remarks: "It is important, too, that the Vice-Chancellor should have the services of a well organised office; it may be that in some cases both registry and finance departments would benefit from the advice of modern business consultants" (p. 221).

I conclude with one specific suggestion. If a senior Professor from the same University is appointed as a Vice-Chancellor, it is well and good because the person is already a teacher in the University and whenever he likes, he can go back to his post as a Professor. But in case the person appointed is from outside, he should be offered a supernumerary post as a Professor so that he does not linger on in his post as Vice-Chancellor for lack of anything else to fall back upon. Indeed, a situation where the person needs the post of a Vice-Chancellor desperately should be avoided. Experience has shown that such persons are dangerous and do the greatest harm to the University. ☐

Social Audit of Higher Education

K.K. Bajaj*

In the tradition of organised education, colleges and the universities play a crucial role. While there is a confusing disparity prevailing in the level of primary and secondary education, the scenario at the higher education level directly linked to the institutions of higher learning also offers a bewildering variety. As a subject of state intervention education has been dealt in different states with varying priorities making the entire perspective uneven and disparate. With different political parties controlling support to the system of education at every level, its quality gets compromised and largely affected. This is so for the reason that not all of them attach uniform priority to the quality of education and instead their approach is of a populist nature making education in all its institutions a subject matter of immediate routine, and of popular demand and supply. The approach of consumerism to education affects the quality of institutions which are opened for political considerations at the behest of political masters. Of late, it has been seen that schools and colleges are announced to be opened overnight without any area specific requirement studies or in response to any sociological needs. Such institutions having political parentage have only a brief survival rate and start wilting away with the passage of time as political scenario changes. The physical character of these schools and colleges however continues to stammer for survival while telling upon the health of the academic gains of their students. Wherever higher education has been privatised, even in the name of social service, the educational management tycoons market education and exploit the demand and supply position in professional courses and charge heavy capitation fees. It is doubtful if capitation fee alone is the panacea for ensuring quality of education. However the level of education in state run institutions continues to suffer from mediocrity syndrome and paucity of resources. There is no social check on practices linked to exploitation of students and parents by rich private managements of schools and colleges. In the course of time such institutions are known to be largely producing students of poor quality who have neither the academic strength nor the practical ability to meet the challenges of unemployment and monetary instability in the market. In a way such products from these schools and colleges neither get employed nor are they employable. It is in this context that in a democracy, with limited resources, a social audit of such institutions becomes necessary. By social audit is meant an indepth scrutiny and analysis of the working of these schools, colleges and universities vis-a-vis their products in terms of their social relevance and survival.

The whole question becomes challenging. The very idea of a social audit of the educational institutions may appear to attack the tradition, autonomy and high profile of our entire teaching community. It may aim to question the relevance of our teachers, and a look into the utility of inputs; it may attempt to examine the role and response of our students in institutions. From the financial angle, it may look into the adequacy, distribution and even the proper utilization of available resources. The entire exercise may not be new. But social awareness about the return of inputs of education would be a way to evaluate our effort in that direction. In fact we have had a series of committees and commissions of educationists, thinkers and planners who have looked into the various aspects of our education at every level. National Policy on Education (1986) has been the last concerted attempt to examine the case in totality and draw out a plan of action with a view to making the whole system dynamic and responsive as never before. Every government expresses its keen concern over the quality of education and its relevance but somehow despite its avowed initial interest it takes a back seat when it is really confronted with the enormity of its vital issues linked to socio-economic constraints and political priorities. The students, the teachers, the educational institutions and the society at large, being the critical factors in our effort to make education mutually relevant and productive, all continue to be evasive about the purpose of education resulting in the emergence of a hazy picture painted through mutual acrimony and accusations. The overcrowded classes in our schools, colleges and university departments, lack of interest among teachers, inadequate resources, poor involvement of administrators, politicians and policy planners, simply contribute to the fatal circularity of the argument that our entire system is deficient and at places is broken beyond repair. Despite this mind-set at all levels, of late, one hears the slogan "Education for All by 2000 A.D." Even with manifold increase in our schools, colleges and universities giving vast

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* *Dean of Colleges-cum-Director,*
College Development Council,
H.P. University, Shimla-5.

coverage to students, this slogan may still be elusive. The progress during the post-independence years has been statistically impressive despite our janta approach and scarce means but it has not been sufficient in the context of our population explosion, and lack of a viable social support system. We have come out with a number of alternatives through non-formal education, open universities and mass literacy programmes. But the problem has remained unmitigated. The higher education endeavour of the country has continued to be unimpressive, and irrelevant perhaps due to cultural pluralities, socio-economic disparities and lack of political will, resulting in swelling the ranks of unemployed with conventional diplomas and degrees.

Accountability of our educational institutions is a major social demand. If the society supports and sustains these educational institutions, in turn, these have to be socially responsive and responsible. The social audit of all educational institutions within the state set-up should be linked to employability of their products, worthiness of their courses, research on the part of their teachers and the extension applicability of their output. It should be seen as to how far the enrolled students have been transformed into viable beings and responsible citizens. After all education is an instrument of change. It has to contribute to the social awareness of the individual. No academic programme or course is worthwhile unless it enriches the mind and character of the students and enhances their capabilities. The most significant contribution of our educational institutions has to be the creation of a potential human resource.

While our colleges constitute the mother sector of education with their vast numbers and socially democratic reach, the universities represent the real higher education sector taking only the best produce of colleges. The students and teachers in the universities embody the nobility of thought and height of academic aspirations in a free world. Universities represent the havens of academic excellence and research. But of late, with the proliferation of universities, the image of universities has also received a setback. The universities which are opened without even sufficient number of students and teachers and with only seasonal grants and futuristic promises of sustainability, suffer from innumerable teething problems and remain only as closed-door mansions with promotion of sectarian interests and sons of the soil. Many universities only pedal mediocrity at all levels to register their existence. Higher education is not the monopoly of any section of society. While it should be democratically within the reach of all, it cannot be claimed as a matter of right or a part-time or a parking place by the undeserving and the weaklings of the society in this age of competing priorities. It is suicidal to an extent to link it totally in the matter of teaching only to the sons of the soil and inbreeding. The UGC, of late, has come up with the scheme of recruitment of teachers at the national level but how far will this scheme acquire a national character, through a mere moral pressure of the UGC, will soon be tested in the context of our obdurate sectarian regional interests. Some of the universities are becoming hot beds of politicians among students, teachers and administrators. Partly so for the reason that our young students have been given the right to vote. In a democratic set up it is justified also. But to politicise the academic atmosphere is hardly understandable. To create awareness about one's social and political rights and responsibilities and to inculcate the qualities of right thinking and leadership in a democracy, is welcome. But its lengthening shadows on our academic pursuits may do the damage which may be irreparable in the time to come. The dominance of politics in its different sinister shades in all matters related to students, teachers and administrators of universities, may result in undermining the quality of academic excellence with which our students have otherwise to be equipped to face the world over.

Funding of universities and colleges determines the health of their programmes. Infrastructure, faculty and the amenities for the students are directly correlated, to the quantum of available financial resources. Given the proper infrastructure, students' amenities and facilities to the teachers, the problems get minimised to a large extent. The University Grants Commission has a greater responsibility to fund the central universities. The smaller universities fail to draw sufficient financial assistance to sustain their growth. Even with its thirty five years of existence while UGC has been charged to maintain and coordinate standards of higher education, it has not been able to exercise an effective control either on the quality of education or the administration of universities. Its guidelines, projects and packages are laudable but their impact analysis through field surveillance would reveal disappointing results. Keeping in view the enormous system of over 6500 colleges, more than 180 universities, over 100 autonomous colleges and 48 Academic Staff Colleges, all looking to UGC, its effort is gigantic and approach herculean. Its achievements are laudable but shortcomings are loud and clear. So far there is no nationally accepted and implemented calendar of admissions, research pattern priorities and linkages, courses, standards of teaching and uniform code of affiliation of colleges accepted by all the

(Contd. on page 12)

TRUE SPIRIT OF AUTONOMY

M. Sulochana*

With the appointment of Governor as Chancellor of the Telugu University in the State of Andhra Pradesh, the two year old agony and suspense in the academic circles is relieved. Further, the promise by the State Government to bring forward a comprehensive legislation for better university autonomy kindled a ray of hope in the hearts of lovers of academic values. Earlier the Government also expressed the intention to revive the old system of Senate, Syndicate and Academic Council in the Universities in lieu of the present Academic Senate and Executive Council. But just reversing the new system to the original form of Senate, Syndicate and Academic Council, does not however meet the much sought after demand for university autonomy. It is a pity that unviersities are made targets of the political stunts i.e., either a bliss or a blow by the state governments and the future of the universities is mortgaged in the changing hands of the state governments.

Immunity Against Political Interference

Whatever may be the administrative structure of the universities, genuine autonomy would be possible only if the government is prepared to accept a cut in their powers and making the universities accountable only to another autonomous body viz., Local Fund Audit. But this should not however in anyway lead to or result in throttling the universities by financial inadequacies. There is an imperative need therefore for codification of privileges and immunities of the universities against political interference.

Consolidated Fund of the State

In order to secure an unfettered freedom to the universities, to act in the best interests of the academic world, a Consolidated Fund of the State should be created and the administrative expenses of the university office including salaries, allowances and pensions payable to or in respect of persons serving the university, should not be subject to vote by legislature but are charged to the consolidated fund. This, though a drastic step is hoped to remove the threat of dwindling finances and uncertain future of universities if they do not dance to the tunes of the state governments. The position obtaining in the case of Comptroller and Auditor General of India in respect of autonomous status can be studied with advantage in this regard.

University Autonomy

University autonomy would mean and include freedom to select students and teachers and decide courses, curricula, research etc. But if the top most executive of the universities himself (Vice-Chancellor) is not a free man, the achievement of the abiding quest for university autonomy is doubtful. There can be no autonomy if the appointment of the vice-chancellors is done by the state governments and the functioning of the university bodies is chained to the government's control. According to the present Act, (Andhra Pradesh Universities Act, 1988), selection of University teachers is also indirectly vested with the State Government.

Governors as Chancellors

Governors ought to be apolitical and therefore are appointed as Chancellors of universities. But the experience in most of the states proved to be contrary to the expectations. In the circumstances whether restoring Governor as Chancellor (Telugu University) is wise enough is debatable. Further the view that Governors need not be ex-officio Chancellors of universities gains strength from the mass resignations of the vice-chancellors in Bihar, the suspension of a vice-chancellor in Rohtak University (Maharshi Dayanand University), and the recent unceremoneous removal of the Gorkhpur University vice-chancellor in Uttar Pradesh, in the happenings of which Governors as Chancellors played a vital role. This is a matter of disgrace to the academic community and foretell further deepening of the crisis in university autonomy.

The University Grants Commission (UGC) has viewed with great concern the practice of appointment of vice-chancellors of state universities at the pleasure of the Governors and the tendency to remove them (vice-chancellors) en masse. The Commission felt that such a state is detrimental to the university environment, maintenance of standards of higher education and the dignity of the office of the vice-chancellors. As long as political personalities are linked with the universities, the projected autonomy will remain a fledgling forever.

**Department of Commerce,*
Osmania University, Hyderabad-500 007.

Andhra Pradesh

The present university administrative structure in the State of Andhra Pradesh as amended by the Andhra Pradesh Universities Amendment Act, 1988, reveals a sad story of:

(i) Transformation of the university bodies into government limbs;
(ii) Vesting the power of selection of teachers indirectly with the state government; and
(iii) Direct interference of the government in the appointment of the vice-chancellors.

There is thus perceptible erosion of the autonomy of the universities in the matters most vital to academic freedom.

The above position would underscore the need of the governments to overhaul their pattern of thinking about university autonomy and give greater scope to the universities towards freedom of action in the academic field.

It is pertinent here to cherish university autonomy as contemplated by the Education Commissions' reports.

It would appear that the first seed of autonomy to institutions of Higher Education was sowed as early as in the year 1882.

University Autonomy and Education Commision 1882

The Education Commission appointed in 1882 by the Government of India studied *inter alia*, the working of the Indian universities and advocated for the gradual withdrawal of the state from the direct support and management of the institutions of higher education. It (The Commission) felt that this withdrawal could only be by slow and cautious steps, handing over a college or a school to a body of Indians, provided there was a reasonable prospect that the cause of education would not suffer through the transfer.

University Autonomy in University Education Commission Report (1948-49)

University autonomy was upheld by this Report also observing that "Higher Education is undoubtedly an obligation of the State but state aid should not be confused with State Control over academic policies and practices. Exclusive control of education by the State has been an important factor in facilitating the maintenance of totalitarian tyrannies. In such States, institutions of higher learning controlled and managed by Government agencies like mercenaries, promote the political purposes of the State, make them acceptable to an increasing number of their populations and supply them with the weapons they need. We must resist, in the interests of our democracy, the trend towards the governmental domination of education process"

University Autonomy in Kothari Commission Report (1964-66)

Another Education Commission appointed in 1964-66 popularly known as Kothari Commission criticized the way the university autonomy was suppressed by the governmental rules and practices. The Report suggested that such "Rules, regulations and techniques that hamper achievement of the real purposes of the university should be modified or scrapped—they should not be allowed to become straight-jackets into which all university activities must be fitted".

While discussing the various aspects of linkage between university autonomy and university finances, the Report criticized the way the funds flow from the Government restrict the freedom of academic action. In its own words, "University autonomy cannot become real and effective unless adequate provision is made to meet the financial requirements of Universities and Colleges. While the UGC has been established as an autonomous body to provide the necessary financial resources to the Universities without governmental control or interference; State Universities have to depend, for their maintenance grants and matching share, on the funds provided directly by the State Governments. This is an important source by which the Government can and sometimes do seek to curb the freedom of the Universities. This is obviously undesirable".

Implementation of the Commission's recommendations in this regard has left much to be desired even now.

University autonomy was slaughtered time and again with plethora of statutes, ordinances, resolutions, amendments to the University Acts and with interference of the state governments in university functioning and financing especially in the states of Andhra Pradesh, Orissa, Uttar Pradesh, Bihar, etc.

Review of the Present System in Andhra Pradesh

The Andhra Pradesh Government has amended the University Acts in the State more than thrice during the short span of three years (1985-88). With the change of Government, another amendment to the University Act is in the offing.

The present system gives scope for direct intervention by the State Government in the day-to-day functioning of the Universities. For instance, replacement of elected members with nominated members in the university bodies namely Academic

Senates and Executive Councils, has undoubtedly stifled university autonomy.

Elimination of MLAs from university bodies in the new Act however, is no solace, as the government nominated members cannot be expected to act better than MLAs.

Another striking feature in the new Act vests government with an indirect power of appointing university teachers. If selection of teachers by the selection committee consisting of academicians, is not ratified by the Executive Council for any reason, the matter would be referred to the state government, whose decision is final. This sounds rather disastrous.

The Governor's role in the new Act is almost reduced to a cipher in terms of powers. The state government found a ridiculous mode of finalizing the candidate for the vice-chancellorship from the panel of names suggested by the search committee leaving the Chancellor to perform the ritual of issuing the appointment order under his seal as a titular head of the university, to the government recommended person. Political considerations are bound to weigh in this selection process and politics, thus, has been directly introduced into the mode of appointment of the vice-chancellor which, so far, was rather indirect.

Governor of Kerala and former Vice-Chancellor of Delhi University, Dr. Sarup Singh while delivering first U.N. Singh Memorial Lecture at the Delhi School of Economics, recently, lamented that the political culture in India had no respect for university autonomy and distrusted academic freedom. He added that all political parties, irrespective of their conflicting ideologies, cherished the leverage to control universities, mostly in matters of admissions, promotions and appointments.

Dr. Singh, could understand and appreciate better, the major flaws of the system of associating political figures with the functioning of the universities and urged the students' and teachers' leaders to disown all allegiance to any political party in stemming the rot. It is hoped that Dr. Singh with a rare blend of both academic and political experience, would help bring about a statute to effect total autonomy to the universities in Kerala, by making them immune to political interference, so that other states follow suit.

The following measures, if implemented scrupulously, would go a long way in promoting the much sought-after autonomy to the universities.

(1) It would be advisable to retain the present structure comprising the Senate and Academic Council. However, certain changes in their composition and functioning would create congenial atmosphere in the academic world. The ideal situation would be obtained, when elections are revived in the university bodies, and the provision in the Act empowering the state government to recruit university teachers rather indirectly is done away with.

(2) Secondly, the universities should be made completely autonomous and should be made accountable to another autonomous body. Changes in the government should not in anyway be allowed to make statutes or amendments in the university Acts, much to the disadvantage of the universities. The principle of non-interference with the privileges and immunities of the universities against political interference should be respected by the state governments.

(3) Thirdly, university expenditure should be charged to a consolidated fund of the state so as to assure free flow of funds to the universities, unaffected by the changes in the government.

(4) Fourthly, no political interference is welcome in the appointment of vice-chancellor in the interest of the university autonomy. As long as political personalities are linked with the university affairs, the much aspired full-fledged autonomy would remain a dream unaccomplished.

The University Education Commission (1948-49) rejected the proposal that the selection of the vice-chancellor be taken out of the university's hands on the ground that if the university is responsible for the appointment of vice-chancellor, he will find it easier to gain the esteem and confidence of the academic community. It rightly emphasized that it is a part of the duty of the university to choose wisely its vice-chancellor. The Kothari Commission (1964-66) agreed with this view and said that the choice of the vice-chancellor should eventually be left to the university concerned.

The Committee on the Administrative Structures of the Universities in Andhra Pradesh (1979) also felt that the appointment of vice-chancellor by Chancellor on the advice of the government is not good as such a vice-chancellor may not enjoy the confidence of the university alumni.

Appointment of Vice-Chancellor by Open Advertisement

University autonomy gains strength only when merit is not stifled but is given its rightful consideration without interference by political heads of government. It therefore, goes without saying that, appointing authority should have the capacity to appreciate and locate talent for the post of vice-chancellor.

Power to appoint a highly proficient person in the field of education with a fair degree of administrative capability carries with it the generally accepted presumption that the appointing authority should equally be endowed with high educational background to assess the right person for the highly dignified post of vice-chancellor.

In view of the above criteria, recruitment to the post of vice-chancellor by open advertisement inviting applications from candidates possessing predetermined high academic qualifications with good administrative background, would merit sincere consideration. The suitable candidate would have to be selected by a selection committee consisting of high personalities in the academic and administrative fields drawn from the whole country. One or two members of the selection committee may also be taken from outside the country to impart a touch of genuine and impartial selection. It would be binding on the Chancellor to give formal orders of appointment to the selected candidate. In this process, the interests of the university would be better served when the selection committee is adequately represented by the university academicians.

This aspect may further be studied in detail with some universities in United Kingdom (U.K.) where the practice of recruitment of vice-chancellors by open advertisement is in vogue.

Conclusion

Though a good beginning was made in the realm of university autonomy, considerable degree of reluctance on the part of government in conferring autonomy could be noticed for the last so many decades. Such a situation could mainly be attributed to the policy of hesitancy born out of lack of continued earnestness on the part of the concerned authorities. Lack of firm policy in matters of the extent to which autonomy had to be conferred, introduced an element of vagueness in defining and determining the extent and scope of autonomy, much to the inconvenience of the universities. Often the universities found themselves on a slippery ground about their autonomous state vis-a-vis control by the governments. The same situation applies even now after the lapse of a long period of more than a hundred years. It can safely be concluded that an Indian university in general is in no way better off from the situation obtaining ten decades ago. It is suggested that a conference of all the vice-chancellors in the country, distinguished academicians and government educational officers is arranged to discuss threadbare all the possible ingredients of the university autonomy with a view to give a definite shape and direction to the concept of autonomy with the least interference and control by the government. Such a situation should not, however, lead to a state of affairs where a government would be inclined to reduce the scope and extent of its financing the universities. It also results in the achievement of much sought after decentralization of powers to the university in the field of higher education which is considered to be the main educational policy direction of the Government of India in terms of its National Educational Policy, 1986. ☐

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Social Audit of Higher Education

(Contd. from page 8)

universities. Perhaps these issues look like attacks into the autonomous character of our institutions of higher learning. While trying to be democratic, the entire approach to education in our colleges and universities cannot be free for all and without a national perspective. Some sort of uniformity lends a national character to our higher education and may make us more emotionally cohesive and academically mobile. Even there is no uniformity in the number of mandatory teaching days in our colleges and universities. The conduct of examinations, even though an essential part of the system, in some of the institutions is erratic, mismanaged and a total eyewash. That's why they have lost their credibility and as a basis for admissions to professional courses and postgraduate classes merit is not determined on the basis of these 'domestic' college and university exams but instead entrance tests are held to objectively assess the level of students at the national level. The debate on these issues has always been interminable with one component of the system accusing the other but if all these components constitute our society, there is ample need for a social audit of the entire system and the performance of our educational institutions particularly the colleges and universities. This has to be assessed in that light for restructuring it and for eventually redeeming it and making it more responsive to our social needs. ☐

AUTONOMY AND EXAMINATIONS

A.L. Mohan*

The UGC grants partial autonomy to selected colleges; the autonomy so granted is restricted to academic matters and conduct of Examinations.

"An autonomous college will have autonomy in the matter of:

(i) framing syallabus, course contents adopting the University general pattern. The course contents and pattern should be framed in such a manner so as to avoid the existing staff as surplus for redeployment;

(ii) arranging for instruction to students;

(iii) devising methods of evaluation, examinations and tests pertaining to the award of the degree/diploma by the University".

Whereas the UGC Guidelines (for autonomous colleges) have detailed the various academic bodies to be constituted, it has a passing reference about the constitution of an Examination Committee which is to be nominated by the Academic Council as a non-statutory body.

Conduct of Examinations by an autonomous college is a challenge and an opportunity. It is indeed a tough challenge as the autonomous college has to go through the entire gamut of the conduct of examinations which has hitherto been conducted by the university; the college has to face the concomitant challenging situations and find solutions: In doing so, it has to uphold the credibility of the system and also make the system work. At the same time, it is an opportunity to prove the abilities of the faculty and the institution to conduct the examinations efficiently and well on the lines of the University pattern. The credibility of the examinations has also to be enhanced by plugging the loopholes that one discovers when the University conducts the examinations. It thus affords an opportunity to improve the Examination System and infuse fresh confidence among the examinees. It would also be a reaffirmation of our faith in bringing improvement in the system because of autonomy. The future of autonomous colleges vis-a-vis the non-autonomous colleges in the country depends on the effectiveness and the credibility it gains among the public at large by the examinations that it so conducts.

Essential Pre-requisites

— Autonomous college must adopt semester system with continuous internal assessment for effectiveness of the system. Most of the autonomous colleges (especially the older colleges in Tamilnadu) have adopted this to a great advantage. Instead of awarding class/division on completion of the course, awarding grades is also necessary.

— The quantum of internal assessment could be initially 25% of the maximum marks of a paper which could be raised to 100% in a phased manner.

— The faculty must be oriented in the evaluation techniques and encouraged to resort to reforms in the examination system.

— Question Banking by the Faculty (involving the brilliant students as well) has to be resorted to profitably.

— The entire programme giving details of the dates for paying fees, conducting examinations and declaration of results (probable dates) must be notified in the beginning of the academic year and these dates should be scrupulously adhered to. In short, a fixed time-frame should be notified.

Infrastructure

— An autonomous college must have a Xerox machine.

— For brisk tabulation and early publication of results, a PC XT computer (with UGC assistance) should also be acquired.

Administration

— A separate cell for the conduct of examinations must be created with a senior teacher as Controller of Examinations assisted by four senior teachers as members of the Examination Committee.

— Secretarial assistance to the extent of the Typist/Clerk, Accountant and an Operator of the Xerox, Cyclostyle Machines has to be provided; their salaries can be met from UGC Autonomous Grant under the head "Additional Administrative Staff"

— A separate (confidential) room to store the question papers, answer scripts etc. must be provided.

Academic

— The various Boards of Studies (BOS) must decide the pattern of question papers, model question papers, on the basis of the syllabus they adopt.

— They have also to draw a panel of suitable persons for assigning the work of setting the question papers

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* *Principal, SDS Autonomous College, Shreeramnagar-532 101, (A.P.)*

(as per pattern) and assessing the answer scripts.

- The BOS should review the question papers set as well as the performance of the candidates and suggest remedial measures (wherever necessary).
- The Academic Council should prepare a detailed booklet of the system of the conduct of examinations, the rules & regulations that would be followed and make it available to the students at the time of admission.
- An "Appeals and Grievance Committee" in terms of the UGC Guidelines must be constituted to redress the complaints, if any.

Evaluation

- As a feedback mechanism, suitable evaluation proformas must be given to examinees and selected parents and got filled in and processed.

Dos and Donts

- The Controller of Examinations must be given the authority to take "spot decisions" in conformity with the norms laid down. He has to be a Crisis Manager. The role of Principal must be that of a Guide and to monitor the working of the section.
- Initially paper setting and assessment can be carried out by external persons. But, attempts must be made to make it totally internal once the credit-worthiness is attained.
- The college should not look to the university for directions, every now and then.
- The autonomy granted to the college must be totally exercised in evolving better patterns and methods for adoption.
- Excess stress on the "confidentiality" should be avoided as it would be often counter-productive. It must be an open system, where the students would not feel it a burden/strain to take the examinations.
- Strict monitoring should be done to see that the examinations conducted reflect the effectiveness of the instruction provided and the reasonable responses of the students.

Constraints

- The UGC envisages the autonomous colleges to meet the expenses on account of the conduct of examinations from the Examination Fees (on par with the University rates) collected from the examinees. It is found that it is impossible to do so and invariably, it would be a deficit financing (to a tune of nearly 20,000 p.a. for a college with 1000 strength) situation. Efforts should be made to minimise the overhead expenses and reduce the deficit. Only when the system is totally internal, it would be free from deficit. Neither the govt. nor UGC extends financial assistance for the conduct of examinations.
- The additional secretariat staff to be recruited in the Examination Section are not likely to be covered under govt. aid. Thus, once the autonomous grant from UGC ceases, the college has to meet this additional expenditure.
- The maintenance charges in respect of Xerox, Computer etc. cannot be met from the govt. aid. Nor can it be met from UGC. It is thus an additional financial burden for which the institution has to plan in advance and attempt to control the expenses.

Apprehensions

- It is likely that the students; faculty and public entertain doubts about the credit-worthiness of the examinations conducted by autonomous colleges and the degrees awarded. Such doubts are unfounded as:

  "The University shall have the power to confer degrees, title, diplomas and other academic distinctions on persons who shall have pursued an approved course of study in an autonomous college. The name of the autonomous college shall however be indicated in the diploma issued to candidates".
- As the semester system has already been tried in many universities at postgraduate level and failed, it need not be thought that semester system with C.I.A. would fail in autonomous colleges also as many autonomous colleges in the country have made significant strides in implementing successfully semester system with ease and efficiency.

Conclusion

- There is no need now to argue for or against autonomous colleges. Autonomous colleges is one of the most important recommendations made by Kothari Commission. In the words of Prof. V.C. Kulandaiswamy: "Our aim shall be to move towards a day when all the colleges shall be autonomous and the universities will cease to function as 'grand examining bodies'. It is the 'Magna Carta' for the teaching community".
- As Prof. J.N. Kapur has rightly said:

  "Autonomous colleges are not for timid people. They are for those who have the courage to work for intellectual renaissance in India" □

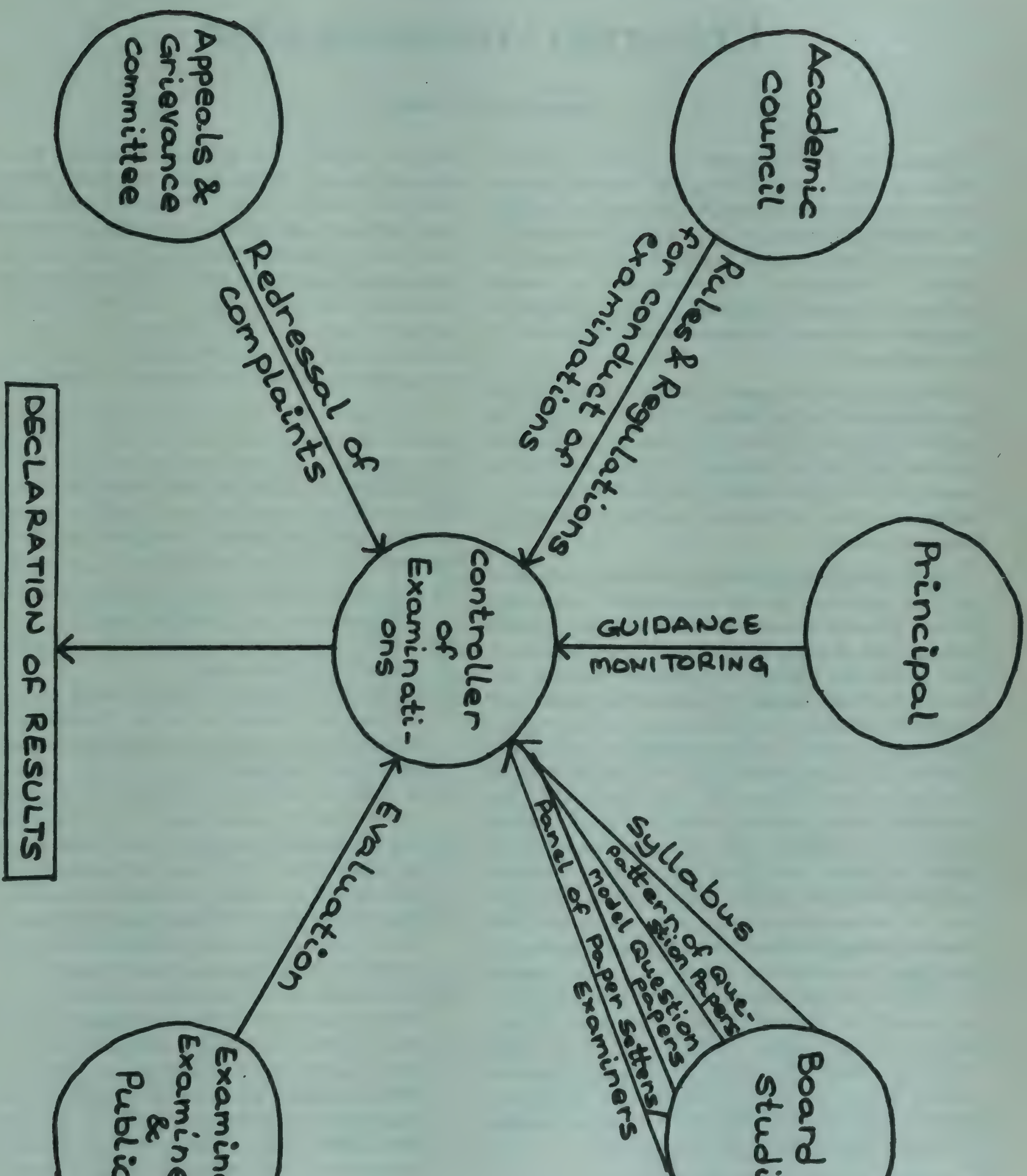
Academic Council
Rules & Regulations for conduct of Examinations
Principal
GUIDANCE
MONITORING
Board of Studies
Syllabus
pattern of question Papers
Model Question papers
Panel of Paper Setters Examiners
Examinee, Examiners & Public
Evaluation
Controller of Examinations
Appeals & Grievance Committee
Redressal of complaints
DECLARATION OF RESULTS

Figure: Graphic Representation of conduct of examinations in an autonomous college.

Productivity Improvement in University Administration

Sanjay Shankar Kaptan*

Productivity is the quality or state of being productive. It is a concept that guides the management of a production system (whether industrial or service) and measures its success. It is the quality that indicates how well labour, capital, materials and energy are utilised. Productivity improvement is sought everywhere because it supports a higher standard of living and contributes to improve the performance of an organization.

Productivity improvement has become a major thrust for all concerned in the country. Whatever may be the sector—agriculture, industry or service—improvement in productivity has no alternative. It is fundamental to success of any organization, and also to create an environment that will increase productive growth of national economy.

Educational administration has become a challenging task. The significant growth in number of universities and autonomous educational institutions has resulted in investment of huge financial and human resources. The growth in number of students enrolled and teachers and staff engaged needs a proper planning of resources available so that best results can be obtained from men, methods, and mechanism of operations. However, it can be observed that the existing network is suffering from various ills and limitations. The complexity in the structure of educational institutions, rigidity of regulations and increasing problems in human relations have resulted in many complex problems which the existing structure finds difficult to solve. A vicious circle of poor performance and poor resource management has taken universities under its close grip. Low productivity is one of the basic reasons of failure of this mechanism. There is a need to tackle this problem of optimal resource utilization, maintenance and improvement in the quality of higher education, broadening the scope of higher education without further increase in burden on tax payers, improving the image of institutions of higher learning and overall improvement of productivity.

The Limitations of Existing Set Up

There is a widespread notion that administrative patterns at all levels are poorly structured. These organizations are trying to do too many things too poorly at too high a price. While the need for a broad based efficient and timely educational development need not be under-estimated in any manner, no segment-user associated with educational services can understand and accept the irregularities and delays associated with university functioning. Many of the complaints against university administration relate to its organizational form and mode of functioning.

The present university set up has many rigidities and complexities which discounts its impact on society. Many experts in the area of educational administration and eminent educationalists have pointed out a number of ills associated with this century old mechanism. A sketch of these limitations can explain the difficulties and dimensions of low productivity in the set up.

(a) University administration tends to be unresponsive and impervious to review and change.
(b) It has a built-in inclination towards efficiency rather than effectiveness.
(c) It provides a monolithic system where one man at the top is expected to be the repository of all knowledge and authority and has little contact with people at lower levels.
(d) It divorces the thought process of the problem solver from the requirements of problem owner.
(e) The employee development process has an age old principle of seniority based promotion than merit awards and achievement oriented promotions.
(f) The rigidity and monotonus system of functioning has its own rhythm which has little to do with productivity and organizational effectivity.
(g) The organization has not yet adopted a "user-oriented approach" of functioning. It works for the sake of work rather than for achieving a set of desired goals. This results into working for form than substance. It has an obsession for rules and regulations which are concerned more with means than with ends. Thus, human aspects of management, viz. objectivity and rationality take a back seat in this organizational vehicle.
(h) The organizational audit acts more as an instrument of inquisition rather than a powerful tool of review and renewal.
(i) Traditions of procedural inflexibility, fragmented organizational structure, a deep rooted feeling that

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* *Reader, P.G. Deptt. of Business Administration and Management, Amravati University, Amravati (Maharashtra).*

any hasty change in procedure is immoral, absense of a tangible end product and lack of understanding regarding cost effective means of doing a job frustrate the measure of introducing productivity.

(j) The university structure is basically a 3-tier structure where the elected bodies, the administrative machinery and the Govt./UGC act at different planes. This diversity of action and lack of harmony of interest also create confusion amongst the administrators which further demoralises them.

(k) Inadequate delegation of powers, duplication of jobs and uneven distribution of workload are some of the commonly observed reasons of low productivity.

The above mentioned ills of university set up are sufficient to explain the root causes of low productivity.

The Need of the Hour

Developing a productivity conscious employee class is the need of the hour. Growing resource crunch, increasing expectations of society, and the need to improve quality of higher education demand a more effective and productive work organization. I.N. Jha and B.K. Sinha have presented a productivity cycle explaining various factors that influence productivity of organization and performance of employees. The cycle is applicable not only in industrial houses but is equally effective even in service organizations like universities.

The institutions working in the field of educational excellence must strive for improving their performance for the following major reasons:

(1) The demand for higher education is growing rapidly. The inflow of aspirant students in every faculty of science is growing so rapidly that the planners of education find it difficult to provide necessary infrastructure to all students.

(2) The growing expectations of society and government cannot be fulfilled without improving performance at all levels.

(3) The apex bodies viz., UGC, AIU are also intending to develop a unified structure of universities which cannot be introduced effectively without an effective administrative machinery.

(4) The idea of harmonious relationship between various universities and coordinating their interdependent functions also needs systematic and planned action.

(5) Last, but not the least, no organization working in the larger interest of society can remain influencial and useful without being productive.

Suggested Measures

(1) The organizational structure should bring more flexibility. The rigid structure of university mars creativity and enthusiasm of true administration.

(2) The university administration should become more objective oriented than power or welfare oriented.

(3) It is the need of the hour that top administration should encourage an attitude of cost consciousness at all levels.

(4) Students' reactions (the ultimate users) should be monitored to find out the areas of poor performance and their expectations to improve the service.

(5) Employee performance appraisal system should be revised. The system should encourage achievement of organizational goals than 'mere completion of a given task'.

(6) The human and material resources should be utilised at their optimum level by locating areas of waste. This can be done by developing a logical and economical procedure of doing a job.

Performance Improvement

The greatest productivity improvement potential in educational organizations is through more efficient employee activities at all levels because it is so difficult to measure the output of officers and clerks in the university. It is correspondingly hard to set standards by which performance can be evaluated.

All organizations have some form of evaluation if only measured by the amount of pay back and its continuation. This crude feedback is potentially inadequate for control of operations. Employee accountability can be developed in several ways. Performance appraisal systems be so designed to evaluate how well jobs are done and to improve future progress.

Different approaches emphasise goals such as:

(1) Improving communication between supervisors and subordinates.

(2) Motivating Employees.

(3) Assisting administrative decisions on wages, promotions, dismissals, etc.

(4) Establishing a data base for productivity.

How successfully the goals are attained depends on both the techniques selected for appraisals and dedication and competence of appraisers.

Some of the useful techniques are described as below:

(a) Management by Objectives (MBO)

Management by objectives, is a very useful technique to improve productivity of institutions with charitable or non-profit motive. An MBO programme in such organizations is based on repeated cycles of the following three phases:

(1) A supervisor meets with a subordinate to discuss goals (results) for the subordinates that support the organization's goals.
(2) Mutually acceptable and reasonably attainable goals are agreed upon and recorded.
(3) In a subsequent meeting the subordinates' performance is evaluated in terms of the recorded goals and the results obtained during the appraisal period. Revised goals are established for the next period.

MBO replaces measured work standards of duties by measurable results of total activities. The essential feature is the feedback of performance that is provided by the subordinate. The feedback acts as a control mechanism to compare expectations against accomplishments. The emphasis on results serves as a catalyst for change and the feedback directs the change towards greater productivity.

(b) Merit Awards

A widely used system in corporate world should be introduced to improve performance, productivity and morale.

(c) Suggestions

Awards should be given for cost reduction and quality improvement ideas. A suggestion regarding forms control, redesigning, procedure improvement and time saving methods should be acclaimed and wide publicity should be given to such suggestions.

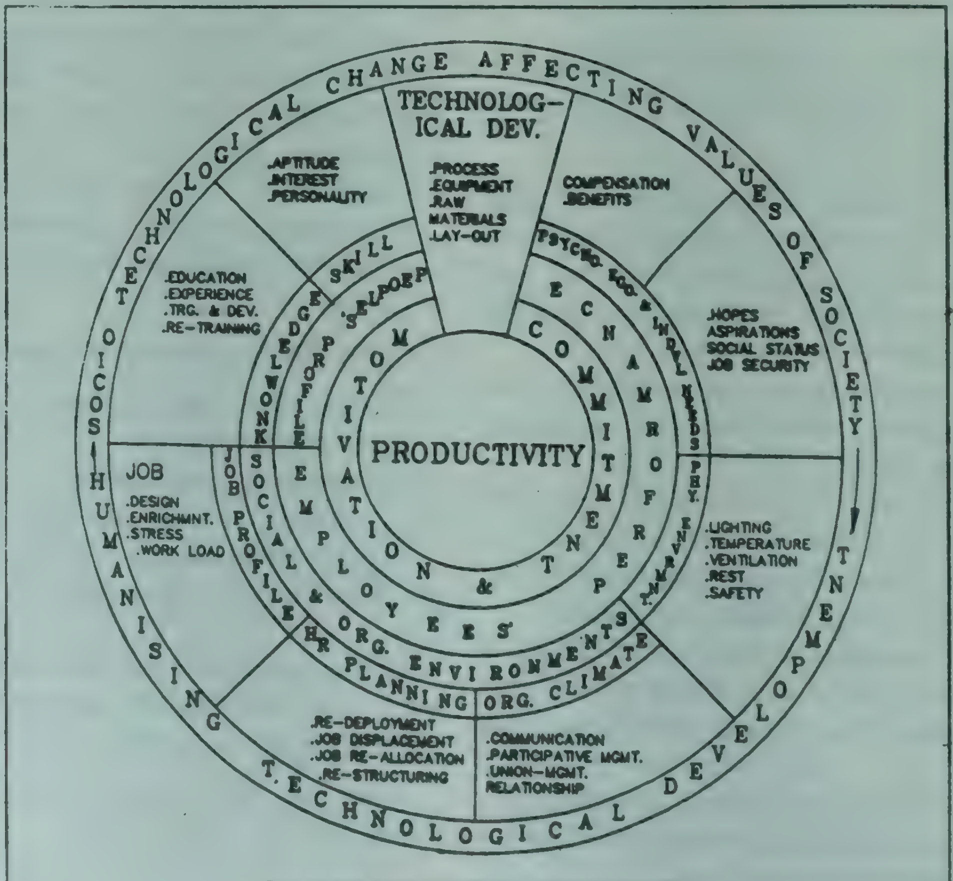
(d) Career Ladders

Career development plans designed to avoid dead end jobs that affect many universities is the root cause of low morale, low efficiency and low productivity cycle.

(e) Certain Suggestions to Employees & Officers

It is observed that many officers and employees of universities feel that their department is not giving desired results and it is rather rated low in terms of productivity. Hence certain hints are given here to improve productivity at personal level.

(1) Critically differenciate between work and valuable work.
(2) Do not confuse activity with results.
(3) Do not confuse efficiency with effectiveness.
(4) Do not confuse working hard with working smart. □



FACTORS INFLUENCING PRODUCTIVITY

Social Ecology in Higher Education

D.A. Ghanchi*

Introduction

Education has been recognised as a very powerful socializing force, and one of its chief goals is to equip the learner with such knowledge, attitudes, skills and qualities of character and behaviour as would help him make appropriate social adjustments whereby he would not only derive personal satisfaction but also contribute to the common good. In normal social contexts such an individual would feel integrated with various groups he has to live and work with. He would experience a sense of belonging to the group or groups he has membership of, would win recognition from them, and consequently acquire a strong feeling of self-esteem and fulfilment. A social group composed of such well-adjusted individuals would have a large measure of inner harmony, and would, therefore, be less prone to intra-group tensions and consequent threat of disintegration. It would also have harmonous inter-group relations.

By investing in education every community desires to realize this goal of social integration and harmony among its members. Only then can its dreams of development, prosperity and happiness for all its members come true.

The Indian Background

It was comparatively an easy and simple task for education in India under the British rule to foster a sense of harmonious social identity in the students because of the presence of a number of facilitating elements in the system. For example, the main object of education itself, then, was extremely limited in scope. It had to produce loyal subjects willing to serve the empire. The student population also came exclusively from elitist sections who were actual or potential beneficiaries of imperial favours, and were, therefore, already a strongly motivated homogenous group. Gender-wise, mostly males pursued the higher studies. Caste-wise higher education was the domain meant exclusively for the scions of the upper castes. It was thus a well-knit small clientele easy to shape through the assembly line of colonial education.

Naturally, education then had to minister to a very narrow profile of its student population. The curriculum was, therefore, narrowly conceived. There were few, if any, occasions for negligence or non-conformity or deviation, let alone an out-right rebellion in any respect, say, the neatly-packaged course contents, or the authoritarian teaching methods or the rigid external examination system or student discipline or the administration of education by the bureaucracy. The culture of command and control suited all, for it served their needs and interests.

The Watershed

The years 1947 and 1950, however, marked a watershed in the history of the country. The former ushered in political freedom, the latter inaugurated a republican constitution. Historically events like these prove epoch-making if they are followed up by appropriate policy initiatives to give moral and material contents to the much hallowed terms 'freedom' and 'democracy'.

The founding fathers of the Indian Republic had exercised all their imagination, patriotic favour and moral sensitivity to give the people a dream—that of a solidly welded, harmonious and prosperous nation.

There followed a concatenation of events, like welfare legislations, development projects, measures of positive discrimination to ameliorate the lot of the deprived, etc. All these contributed to a new awakening in the people. And, therefore, it generated more demands for a share in the national cake. Education being an empowering force came in for a heavy demand.

The educational scenario in the country since 1947 has been a continually unfolding phenomenon. Year after year new dimensions have emerged, and each one of them has kept assuming a bigger size, a great diversity and a more involved complexity. Quantitatively as many as 100 million students, 4 million being in higher education, receive formal instruction in 1990. The human dimension to this huge enterprise of education in modern India is simply mystifying. No education system elsewhere in the world is required to deal with such a heterogenous mass of the youthful human resource of the country to be transformed into an integrated, harmonious, and forward-moving citizenry. One can, therefore, realize the hazards of the educational profession in free India vis-a-vis in the India under the British domination. Such realization should inevitably evoke greater understanding and sympathy for all, viz. the students, teachers, administrators and even policy makers, and should eventually generates greater appreciation, firmer commitment and a stronger political will to make education a more effective tool of social integration and harmony, and, thereby, of development with social justice.

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* *Vice-Chancellor,*
North Gujarat University, Patan, N.G.

Disturbed Classroom Ecology

Any sound system of education must have a proper ecological perspective on the lives of its students, for the students are interwoven into an intricate web of social relationships. The heterogenous composition of the student population in India's present day universities and colleges makes it more incumbent on the part of all connected with higher education to develop such perspective. The most pressing factors for this are as follows:

(a) Quantity

There is almost an astronomical growth in the size of institutions due to an explosion in the number of students. Consequently, the average student gets lost in the motley crowd and is reduced to anonymity. He feels socially alienated. This feeling generates a sense of self-abridgement in the student which damages his personality, his self-esteem and his attitude to life and its problems.

(b) Disadvantaged Learners

Of late, students from weaker sections, most of whom are first generation learners, have been entering our higher education system. They bring with them severe constraints—psychological, cultural, social, communicational and economic—which hinder their socialization and assimilation with the mainstream, let alone their academic achievement.

(c) Gender Discrimination

Girls are now found coming forward in increasing number in colleges and universities, though there is considerable disproportionality in their coverage from state to state. However, male chauvinism, operating both covertly and overtly, is a bane to the evolution of a balanced society in classrooms and on campuses. There is subtle and not so subtle discrimination against females which militates against their fullest development on one hand and gives rise to a fractured society on the other.

(d) Adverse Student-Teacher Ratio

With the expansion of school education, and with the rise in demand for higher education from various sections of people, the student population has increased phenomenally. One of its evil effects is the unfavourable student-teacher ratio. It is not uncommon to see college classes of 150 students, and even more than that. It is impossible for teachers even to mark the attendance of such a large number, let alone pay individual attention to them in the hour of their need. This leaves the students uncared for which leads to their further alienation. Social hazards of such neglected existence of the youth are too many, like unrest, rowdyism, drug addiction, anti-social behaviour and poor academic performance.

(e) Climate of Violence

The climate that prevails in institutions and on campuses affects the students' social selves. Certain cruel practices like ragging, harassment of juniors by seniors, asking rural students, girls and otherwise less articulate students to perform humiliating tasks are virtual killers of esteem and worth. Often celebrations of certain festivals have communal or casteist colour. Hostels are often notorious for being used by anti-socials both from among students and community. Factional fights, holding hostages, and gangsterism are their chosen forms of behaviour. Such lethal climate terrorises the students, and works as a barrier to the promotion of harmony, brotherhood and integration among them. It is these corrosive elements that lead to the degradation of social ecology in institution of higher education.

(f) Irrelevant Courses

The social irrelevance of the present courses and the consequent unemployment and the sense of disillusionment among the products of higher education have generated great frustration in them. This generats apathy towards their studies leading to a loss of interest in life and its charms and challenges.

(g) Social Turmoil

The contemporary Indian society in general has been passing through a very unsettling turmoil. Forces inimical to cohesion and integrity, harmony and peace, self-sacrifice and compassion have had an upper hand. Vertical and horizontal cleavages have torn asunder the ecological fabric of the society. The students in colleges and universities being sensitive persons feel the seismic tremors of social turmoil, get upset, lose faith in the system and ultimately be a part of the moral debris a fractured society gets reduced to. There is no machinery in colleges and universities to provide moral and emotional cushion to the students undergoing these convulsive shocks.

Impact

The young students in our universities and colleges of the socio-cultural diversity narrated above are doubtlessly an enthusiastic lot, with a tremendous potential for growth. They crave for recognition, acceptance and assimilation to form a harmoniously blended human capital of the country entitled to equal opportunities to contribute to and partake of the fruits of development.

However, this does not happen because the social ecology of our classrooms is battered and distorted. This has a deleterious impact on the students' lives, their attitudes towards themselves, towards their peers, and towards society, on their academic performance, and on their outlook on life. This is what happens:

(i) Classrooms and institutions get divided on lines of caste, religion, region, gender, or even political parties. Such cleavage is reflected in academic as well as extra-curricular activities.

(ii) The students get rarely welded into a goal-oriented, and committed group dedicated to a common pursuit of knowledge, culture and social service.

(iii) A very convenient and handy method to deal with such disparate mass that teachers usually employ is the lecture method and that of coaching to test requirement. Teaching-learning is devoid of excitement and challenge.

(iv) Students are indifferent even to the requirement of minimum physical attendance in a class, let alone to their scholastic studies. Consequently, their result at even the stereotyped external examinations is poor despite their indulgence in malpractices like cheating, mass copying, etc.

(v) The incidence of wastage and stagnation at the higher education stage is frightening. Among the dropouts, the students from deprived sections usually outnumber the rest. Getting stagnated or dropped out destroys their faith in and expectation from education as a socially empowering force.

(vi) Finally, the social costs of turning out a generation of the youth bereft of social moorings are enormous. It is these very ill-equipped young persons who are to run the country and shape its destiny in the time ahead. One can anticipate nothing but disaster with such a dispensation.

Remedies

Any human system can realize its objectives only if it is a system whose ecology is sound and balanced and is characterized by the following traits:

(i) All the members of the system regardless of their diversities are stitched into a cohesive and harmonious group.

(ii) Every member experiences a sense of belonging to the group.

(iii) Every member is whole-heartedly accepted by others, and he feels that he is an esteemed constituent of the group.

(iv) Every member participates in the goal setting process of the group, identifies himself with the goals of the group, participates fully in the process and struggle for their fulfilment and enjoys an equal right to its fruits.

(v) Every member is conscious of his potential, and he endeavours, individually as well as in concert with others to realize it.

(vi) Every member is a monitor and evaluator of the individual and collective endeavour and owns his duty to improve the process and the quality of his contribution to it.

Higher education as a system operated in universities and colleges has to develop into an ecological mosaic through sustained efforts of all.

However, the students who enter the system suffer from many constraints that thwart the evolution of the mosaic. They enter the system as a new, unknown world, leaving behind the protected world of school life, missing its smallness, its warmth, its intimacy and its informality. It's a disturbed and, not unoften, a degraded social ecology that awaits them there.

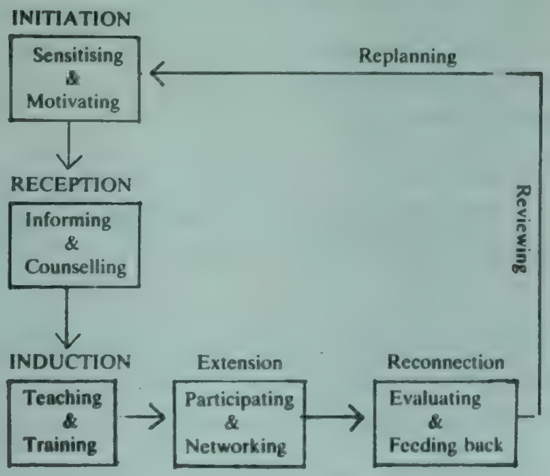
It is however possible to remedy the situation by adopting a five-fold strategy which should be a concern of all, of the entire system operating as a mutually integrated cosmos.

The Strategy

The five components of the strategy are as follows.

1. Initiation
2. Reception
3. Induction
4. Extension
5. Reconnection

Schematically it is conceived asunder:



A brief overview of the functions of these components will show the interrelatedness of the programme and its ongoing nature.

Initiation

Higher education draws its clientele from the higher secondary system. It is this catchment area which needs to be cultivated to ensure a socially well sensitized and psychologically motivated student population at the college and university. Hitherto, no systematic proactive programmes have been undertaken anywhere to form a continuum of school-college-university relationship. This lacuna should be filled up and activities like the following ones should be undertaken on a regular footing.

(i) Each college should demarcate its hinterland from which most of its student population is drawn and establish structures to form linkages with the higher secondary schools in the area. There may be institutional clusters and complexes. A similar initiative was undertaken in the mid-sixties at school stage by forming school complexes some of which survive even today. Most of the present universities and colleges do have the infrastructure like Departments of Continuing Education, Extension Services Centres, National Social Service Organisation, Deans of Student Services etc., which can be involved in this bridge-building assignment with suitable modifications and funding.

(ii) Appropriate interactive programmes of a wide range, curricular, extra-curricular and orientational, employing manpower as well as technology should be chalked out for the entire academic year and implemented with a view to initiating the school students in the world of higher education. Programmes like the following would click very well.

(a) Curiosity-building programme through dissemination of information about institutions, courses, study styles, social life and opportunities in higher education. This can be done through print material, audio-visual presentations, visitations, talks, open house, exhibitions etc.

(b) Counselling on behaviour problems, social relations, inter-personal communication and study habits to meet the future demands at the college or university.

(c) Camps, workshops and short stay programmes for collaborative, harmonious living and working experience with peers at school and seniors at colleges.

(d) Orientation to teachers of schools as well as colleges in developing a feeling of collegiality and common stake in building up a cohesive student population and enhancing the level of their curiosity and motivation so as to make the teaching-learning endeavour a socialising experience.

(e) Selective teaching assignment at school for college teachers, action research by them on developmental problems of students with varying backgrounds and conflicting particularities, case studies on social behaviour etc., can help build a bridge between the professionals, and through them, among their students.

Ultimately the principals and teachers of schools and colleges will have to develop a feeling of commonwealth of professional interaction and colleagueship to promote this vertical relationship among them and, thereby, ensure an integrated community of students.

Reception

School students flock almost desperately to colleges and universities. Many are just driven by the urge to go ahead without knowing why. This lands them in an irreversible tragedy. This can be avoided by providing organised reception services as follows:

(a) Admission procedures should be made scientific and humane in place of the present adhoc, and arbitrary take-it-or-leave-it affair. Broad-based admission committees consisting of teachers, students and community representatives should be assigned the work. Deans of admissions can also make things more scientific. A wide range of tools for admission, like tests, interest inventories, attitude check-lists etc., can be developed and used.

(b) Ample information and guidance material, both in print and in audio-visual form, should be made available to the prospective students. It should pertain to physical plant facilities, human services, traditions etc., and it should be supplemented by personalised interpretive services to enable the admission-seekers how to make decisions and how to make psycho-social adjustments.

(c) Organised, comprehensive counselling should be a part of the entire reception process, particularly to help the new entrant to define his goals in the context of his perceived potential.

(d) Conferencing with teachers should be the next input to help the new student to understand the social and academic climate of the college or the university, its demands on him and the possible ways of dealing with them, including the choice regarding courses, and even friends. Parents can be involved at this point of decision-making.

In short, an open-hearted reception to a non-threatening environment would provide a strong emotional platform for the new student to launch his journey in the realm of higher education.

Induction

This is a very vital component of the programme aimed at putting the student on rail, and helping him move in company with others in his academic pursuits. This would need help asunder:

(a) Students should be introduced to one another informally and be involved in sessions of indepth mutual understanding and appreciation.

(b) Simulations should be provided to them for practising communication and interpersonal skills, coping skills and skills to manage emotional crises like failure in friendship.

(c) Training sessions be held for developing appropriate learning skills, study habits, participative work and cooperative living.

(d) Short-duration visits and placements and workshops should be arranged to develop social traits and abilities for participation in extra-curricular activities and for excellence in their chosen fields of performance.

(e) Student-oriented classroom teaching methods, like seminars, symposia, brain-storming etc., with a judicious mixture of elements of cooperation as well as competition should be employed as a regular policy to build up a powerful social ethos that would integrate all into a single community of learners.

(f) In order to provide timely guidance to students encountering problems of adjustment, interpersonal relations and academic progress homeroom system should be introduced whereby every teacher will interact with a group of 20 or so students and help them manage their problems.

The classroom, with an invigorating climate, provides an infallible recipe for promoting maximum social integration and intellectual output on the part of the students, who would then extend themselves with abounding self-confidence into numerous extra-mural avenues described hereafter.

Extenion

From the classroom to the stadium, the theatre, the hobby centre and the wide arena of community life in general can be an exciting adventure for the young student who has been convincingly inducted into the system. This transition can be facilitated by activities like the following:

(a) Linkages should be formed between the college and university on one hand and the society at large—the parents, business, industry, services etc., through appropriate bodies like associations, clubs and service organisations on the other. There should be to-and-fro movement of ideas as well as activities among them bringing down the wall that has separated them for so long.

(b) Colleges and universities must develop a pro-society attitude, and implement extra-mural programmes of diverse types involving students, teachers and community at large. Let the students of all communities, social classes and cultural backgrounds merge with the society through these programmes.

(c) Colleges and universities should open up avenues for extension of students' personality in various fora like the NSS, the NCC, and the various student bodies for social work, cultural activities and creative pursuits. There should be regular training programmes for developing effective skills of organisation, leadership, social networking, group dynamics and cooperative living and striving in the students.

A multi-pronged programme enveloping the students' emotional, moral and social selves would lead to their purposeful extension into innumerable channels of expression and integration.

Reconnection

An educational institution cannot rest content with the delivery of its output in the form of a degree holder, for education is essentially a continuing process. A living institution should, therefore, merge the new and the old generations of students into an ever-expanding, integrated community sharing a heritage of values and commitments that would not only strengthen their *Alma Mater* but also enrich their community and country. This can be realized through programmes like the following:

(a) Alumni bodies should be formed and associated with colleges and universities in an effective manner. They should participate in orientation programmes in socio-cultural fetes, and in specific teaching and training projects aimed at socializing the new students and providing them successful models of an active, meaningful and rich life.

(b) Old students' homecoming events, both at individual and group levels, should be a regular component of the continuing education programmes in colleges and universities. The duration, contents and mode of organising these events can be of a large variety. They should be suitably exploited for generating and reinforcing social cohesion on the campus.

(c) Parents' organisations and alumni associations constitute a rich human resource. They have skills, expertise, goodwill and, of course, material resources to help the new generation of students in finding their feet, in discovering their true selves and in operating the complex enterprise of life with maximum satisfaction and self-realisation.

Thus, reconnection of the old student generation with the new one on ongoing basis will provide a means to evaluate the entire five fold strategy, and supply the necessary feedback to modify, and supplement it suitably and keep it in trim.

Means & Mechanisms

Demands of a sound social ecology in our colleges and universities would require a functional mix of appropriate means and mechanisms to implement the five fold strategy with maximum effectiveness and success.

Firstly, it will have to be a total affair embracing the whole institution, with all its resources, human and physical.

Secondly, it would necessitate an attitudinal change on the part of all, particularly the teachers and administrators who are used to a formal mechanistic concept of education devoid of social sensitivity. They will have to develop a proper perspective of social ecology of the student world and work for its careful nurture and preservation.

Thirdly, teachers will need to be continually reoriented to be effective facilitators of the process of socialising the students and integrating them into a harmonious ever-progressing human society. Academic staff colleges, departments of continuing education, teachers' professional organisations and similar other agencies can impart such training, Every institution also can have in-house continuing renewal programme for teachers and administrators.

Fourthly, management of higher education, whether private, corporate or government must recognise this new dimension of the goal of education, and provide infrastructural facilities to help teachers and administrators to work for its realization.

Lastly, higher education has a social mandate to build up the front rank of leadership for emergent India—a nation-based on the ancient cultural heritage of truth, compassion, empathy, and fellow-feeling, and the values enshrined in its republican constitution, viz., democracy, secularism, socialism and harmonious pluralism. All those who are connected with the mission of education will have to rise above their narrow affiliations, be they political, social, religious or cultural, and provide an inspiring model to their students.

Conclusion

One's involvement in the exciting educational enterprise of modern India is an opportunity to redeem oneself of the obligation one owes to the nation and for that matter to the world at large, to contribute to the task of building a new human society where walls of separation would be no more, where barriers of discrimination would no longer exist, and where everyone will be encouraged to develop to his maximum potential and thereby help build up the indissoluble world of Walt Whitman's dream:

Come, let's make the world indissoluble,
Let's make the most splendid race,
the sun has ever shone upon;
Let's make divine magnetic lands,
With the love of comrades,
With the life-long love of comrades.

□

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NEW DIRECTIONS IN THE ROLE OF TEACHERS

K. Venkatta Reddy*

Gone are the days when teaching was taken as a last resort. At least with the most attractive revised UGC scales which have been implemented with effect from 1st January 1986, the college and university teachers must stop grumbling and start working towards fulfilment of the goals set before them by universities and society at large.

The university is a significant human enterprise and the lights and shades of its life would affect the very foundation of human society. The person who is largely responsible for the fortunes of this enterprise is the college teacher. For, the success of any programme of higher education would depend on him to a very large extent.

The college teacher, then, has a three-fold task: to communicate knowledge, to be alert to the ever-widening frontiers of knowledge and to concern himself in a constructive way with what happens around him. The first aspect of the task deals with the teacher's relation with students, the second with the improvement of his own subject, and the third with the responsibility he owes to society or community in which he lives.

The college teacher should no longer remain indifferent to the students. To be effective, he needs to look upon each student as an individual for whom he has a responsibility. It is his primary obligation to do his best for his students by taking utmost care of the subject he teaches.

Even in a big class, if the students are properly approached and the subject is presented in an effective way, students become responsive and interested in the subject. There is no point in throwing the entire blame upon the students for indiscipline in the class. We find that the same students who give trouble to one teacher are patient listeners in the class of some other teachers. How does this happen? Much depends on the teacher himself. If he is thorough with his subject and if his teaching is interesting and useful, the students are normally responsive.

The teacher's task, however, is not complete even if he delivers his goods successfully. The various methods of instruction adopted by the teacher should also invariably aim at the development in students of the powers and habits of mind necessary for independent acquisition of knowledge and to foster creative and critical thinking. The teacher would do well to help the students, in the course of his contact with them inside as well as outside the classroom, cultivate a sense of values and a constructive philosophy of life.

Though a thorough mastery of the subject is indispensable, it can no longer be said to constitute the sole measure of a teacher's qualifications, for adequate guidance through teaching involves more than an understanding of curriculum materials. It is very essential for the teacher to have familiarity with the characteristics of students and the society to which they belong.

If education is to be highly effective in the modification of pupil behaviour along desired lines, no intelligent approach can be made except on the basis of thorough familiarity with the basic conditions which determine the behaviour of an individual as such or as a member of a social group. Therefore, to be really capable of exercising a guiding influence over students, a teacher must have lived life himself, must understand the social and biological drives of adolescence and, what is more, be able to utilize these forces in the development of a classroom curriculum based upon the needs and interests of youth in the modern age.

Secondly, the teacher should be familiar with the characteristics of the present-day society as well as with the various societal types represented in his classes. He should be aware of the changes occurring in a pupil's social environment, and also understand the particular problems involved in belonging to different groups, the conflicts and bonds existing among their members, the methods of coordination, integration, and cooperation by virtue of which individuals from various societal levels and types manage to coexist. Taking cognisance of alternative values and of the need for re-examining present institutions in the light of changing conditions equips the teacher with the ability to participate in effecting the necessary behavioural modifications.

**Professor of English,*
Sri Krishnadevaraya University, Anantapur-515003.

The student could be said to have been really educated only when he is in a position to adjust himself to his society, share in its experiences and contribute to its maintenance. This demands on the part of the student an understanding of the aims and interests of the social group, together with a sensitivity to its changing needs, a desire to cooperate by granting the rights of others, a readiness to share the obligations as well as the rights and privileges of membership in the group, and vocational preparation to contribute to the social welfare by rendering the best service of which one is capable and by virtue of which he can maintain himself. The teacher must be able to detect the special capabilities of each student and to devise learning situations whereby the student fully develops these qualities that will enable him to take his rightful place as a responsible and well-integrated member of the society he lives in.

As regards the improvement of his subject, the teacher should keep himself abreast of the new trends and developments in his chosen field by constant reading and by attending refresher courses, summer schools and seminars. He should also engage himself in research and regularly publish papers and books.

With explosion of knowledge, on the one hand, and explosion of aspirations of students, on the other, the problems of higher education have acquired greater complexity and magnitude. Knowledge is developing so rapidly that at any given moment, available knowledge may already be becoming obsolete. On top of that, students expect more from their teachers now than they did in earlier days.

Therefore, the role of the teacher as the dispenser of knowledge only does not seem to be very relevant now. It is more important for him to initiate his students into the art of learning by way of helping them acquire the right mental attitudes and learning habits. Thus, the teacher's role is changing. His authoritative delivery of knowledge is being supplemented by his spending more time diagnosing the learner's needs, motivating and encouraging study, and checking the knowledge acquired.

The teacher is now expected not only to inculcate knowledge but also to encourage thinking. He has to become more an adviser, a partner to talk to. He has to help seek out conflicting arguments rather than hand out ready-made truths. For this he will have to devote more and more time and energy to productive and creative activities.

Naturally, becoming a successful teacher presents a greater challenge today than at any previous time in history. As an interpreter, the teacher has to place new knowledge and new experience within the context of what is already known and understood by the students. In order to be a good mediator, he has to understand a great deal about the nature of knowledge and also about the way in which people at various ages and stages of development perceive the world around them. As a guide, he has to teach the student 'how to learn' rather than stuff his mind with factual information.

Then, teachers are being challenged to utilise new approaches and methods in an effort to improve learning results. They have to seek improved ways of teaching by developing new programmes and instructional strategies such as enquiry approaches, simulation games, contract approaches, computer-assisted instruction and programmed learning materials. What is more, the teacher is confronted perpetually with the problem of determining his role as a consumer of the past and as an innovator of the future.

To meet the new challenges boldly and to play his role meaningfully, the teacher, besides imparting knowledge, has to help the young students understand the components of their conscious and unconscious personalities, the meaning of their dreams and aspirations and the nature of their relations with one another and with community at large. In short, he has to teach his students not only the art of learning but also the art of living and working in a society which they must create as an embodiment of their cherished ideals and realized goals.

Lastly, the teacher owes a responsibility to society or the community in which he lives. This awareness is almost totally lacking in the present day teacher who seems to be preoccupied with other problems. It is time the teacher looked at the problems around. For, the college teacher, more than others, is competent to give a deep thought to contemporary problems—social, economic, political and cultural—from both scientific and philosophic points of view, to assess the trends underlying them and also to suggest remedies which go to the very root of their causes. It is, indeed, the prerogative of the college teachers and university professors to give such guidance to the government, and by exercising this prerogative they can serve the nation best.

They could also take up, wherever possible, the cause of non-formal education which is of great and immediate significance. Through informal contacts with the masses the teacher could inculcate human and moral values and spread scientific temper and national outlook among them. Unless the teacher looks upon his job more as a mission or a vocation than as a mere means of livelihood, he can never discharge his responsibilities satisfactorily. □

Genesis of the Gujarat Vidyapith

Education for National Reconstruction

Ramlal Parikh*

Evolution

The Gujarat Vidyapith was founded by Mahatma Gandhi, its life-long Chancellor, in the year 1920. It was started as a Rashtriya Vidyapith (National Institute of University Education) and was the first of its kind established in the wake of the non-cooperation movement. Sardar Vallabhbhai Patel was its Vice-Chancellor from 1935 to 1948 and after Gandhiji's demise, the Chancellor, Dr. Rajendra Prasad remained the Chancellor until the end of his life. Shri Morarji Desai is the Chancellor at present. Gandhiji had such high hopes from this institution that in the first speech in 1920, he stated as follows:

> "......I have done many great things for which I am proud. There are something for which I repent. Most of them were tasks of great responsibility. But let me say without exaggeration that I have not done anything which can be compared with to-day's work....."

Upto 1930, Vidyapith had provision for teaching upto degree courses in languages including Gujarati, Marathi, Bengali, Sanskrit, Persian and English; Indology, Pharmacy, History, Mathematics, Philosophy, Politics, Economics, Commerce, Music etc., and it had turned out 310 graduates.

1930 to 1935 was the first break in the academic work of the Institution due to the national struggle for Independence which the teachers and the students joined. The activities were resumed in 1935 when the Vidyapith was restored by the government.

Another such break came in 1942-45 due to the "Quit India" movement. As before, the teachers and the students joined the movement and the normal academic activities were, therefore, at a standstill.

After 1945, the work was resumed with the starting of the Mahadeo Desai College of Social Service in June 1947 with 8 students which has now grown into fulfledged residential Institution including Master degree and Doctorate studies. It has turned out over 3500 graduates upto 1990 who are working in over 250 villages of Gujarat through Ashram Schools, Post-Basic Schools, Primary Teachers' Training Colleges, Backward Class Hostels, Tribal Development Blocks, Co-operative, Panchayats etc. Thus the Gujarat Vidyapith is institution of higher education with an integrated system of education teaching from the Nursery, Elementary School and High School, to the Bachelor degree, Master degree and doctorate courses. Its various buildings, hostels, residential quarters etc. in Ahmedabad are spread over about 28 acres of land. This campus is now known as Mahatma Gandhi campus. There are two rural campuses also in Gandhinagar district. One is named in memory of Sardar Vallabhbhai Patel who was the Chancellor after Gandhiji's demise. It is called Sardar Patel Rural Service campus. It has 80 acre farm on which there is a Krishi Vigyan Kendra, a Rural Service College for Women with specialisation in Home Science, Appropriate Technology Centre for Studies in Bio-gas, and an Industrial Training Centre in Electronics Repair & Civil Design as well as Cells for Social Forestry, Adult Literacy & Non-formal Education. Another rural campus, located in village Sadra, has about 30 acre land on which there is Rural Service College for Boys and a College of Physical Education & Health as well as a P.G. Department of Rural Management & Rural Development alongwith a Panchayati Raj Training Centre. It has also a Centre of Science for Rural Development and Adult Literacy Centres and Public Hygiene Centre. A centre for foreign students to learn through living of Indian Culture is also located here.

Gujarat Vidyapith was declared as an institution deemed to be a University under Section 3 of the University Grants Commission Act, 1956 vide notification No.F.10-20/62lu2 published in the Gazette of India, Part I, Sec. I dated the 27th July, 1963. The U.G.C. now actively supports the development of the Gujarat Vidyapith. In 1990 the Gujarat Vidyapith completes its 70 years of trying periods, in its struggle through education for social transformation.

The Emblem

The emblem of Gujarat Vidyapith is an open lotus flower. In it, in Devanagari script is written *"Sā vidyā yā vimuktaye"* i.e. knowledge is that which liberates (us). In Arabic is written *"al hikamato zallatul monimine fahaiso vajedaha ahakko leha"*

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* *Vice-Chancellor, Gujarat Vidyapith, Ahmedabad-380014.*

In this emblem there is a Banyan tree i.e. *Ficus benghalensis,* which signifies growth. There is also the moon that symbolizes beauty, calmness and development. Lotus shows non-attachment, holy spirit. Lamps on either side in a circle symbolize knowledge.

The Gujarat Vidyapith was established for attainment of independence. The object of political independence was temporary but the devotion for liberty and knowledge are our permanent ideals. This devotion should continue to grow like a banyan tree and the moon with a spirit of non-attachment of a lotus.

Objects

(1) The principal object of the Vidyapith shall be to prepare workers of character, ability, education and conscientiousness, necessary for the conduct of the movements connected with the Regeneration of the Country in accordance with the ideals given by Mahatma Gandhi.

(2) The teachers and trustees of the Vidyapith as also all the institutions connected with it, shall regard untouchability as a blot on Hinduism, and shall strive to the best of their ability for its removal, and shall not exclude a boy or a girl for reason of his or her untouchability nor shall give him or her discriminatory treatment having once accorded admission to him or her.

(3) The teachers and trustees of the Vidyapith shall restrict themselves to those means only which are not inconsistent with truth and non-violence and shall conscious strive to carry them out.

(4) The teachers and trustees of all the institutions connected with the Vidyapith shall regard hand-spinning as an essential part of the national regeneration movement and shall therefore spin regularly except for unavoidable reasons and shall habitually wear khadi.

(5) The mother tongue shall have principal place in the Vidyapith and shall be medium of instruction for all education.

Explanation: Language other than Gujarati may be taught by the direct method.

(6) The teaching of Hindi-Hindustani shall be compulsory in the curricula of the Vidyapith.

Note: The Hindi-Hindustani means the language commonly spoken by the masses of the North, both Hindu and Mussalman, written in the Devnagari or the Persian script.

(7) Manual training (Audyogic Shikshan) shall receive the same importance as intellectual education and only such occupations as are conducive to the nation shall be taught.

(8) Whereas the growth of the nation depends not on its cities but its villages, the bulk of the funds of the Vidyapith and the teachers shall be primarily employed in the propagation of national (Rashtraposhak) education in villages.

(9) In laying down the priorities of education, the needs of the village-dwellers shall have principal consideration.

(10) There shall be complete toleration of all established religions in all institutions connected with the Vidyapith, and for the spiritual development of the pupils, knowledge of religion shall be imparted in consonance with truth and non-violence.

(11) For the physical development of the nation, physical exercise and training in manual work shall be compuslory in all the institutions connected with the Vidyapith.

The Educational System

The Gujarat Vidyapith provides education from nursery to doctoral studies. It has its own educational system built after persistent experiments for over 70 years and is based on Gandhian ideas of life-centred and work-centred education in India. The integrated system of education of the Gujarat Vidyapith from elementary to higher education including doctorate studies, provides answers to some very important questions for reforming prevalent educational system in India which is out of tune with our culture, heritage and native experience and realities. The objects of the Gujarat Vidyapith clearly enunciate a programme of the educational system suitable to the soul of our nation. Some of the essential features of this system are as follows:

(1) Community Life:

The system of education is mostly residential and hostel life is an important instrument of education and training in community life. The management of the community life particularly the upkeep and cleanliness and sanitation of hostel buildings, dining halls, lavatories etc., as well as help in cooking etc., are done by the students themselves. The programme of education starts from early morning from 5.00 a.m. followed by community work on the campus. Every course is designed to impart training in self-reliance to students so that they can develop spirit of self-reliance and self-confidence. The management of hostels is done mainly by students themselves, including keeping its time-table, and managing store, dining hall etc.

(2) Socially Useful Productive Work:

Two hours participation in productive work is provided in all studies upto Bachelor's degree as well as in teacher education so that the students cultivate a sense of dignity of labour and also learn elementary skills in rural crafts, like spinning, weaving, agriculture, animal-husbandry, soap-making, home-science etc.

(3) Community Service:

Some form of concurrent or periodic Social Service or Community by students is required in every course. It may be in the form of two hours a day Social education or 15 days' work camp or agricultural extension work in slums, rural areas and tribal areas.

(4) Maximum Working Hours and Working Days:

The number of working days in a year are generally about 250 and students are involved in well-planned programmes of training in hard work for at least 8 hours a day. Very limited number of holidays are observed in a year. Vacations are also of very short duration.

(5) Daily Congregation:

Daily congregation in the former Assembly prayer is an integral part of education and is generally followed by 40 minutes community-spinning. In hostels day begins with early morning congregation and ends with evening assembly prayer.

(6) Khadi and Spinning:

Wearing of clothes of certified Khadi only and participation in community hand-spinning as a symbol of one's faith in dignity of labour are necessary for students, teachers as well as those in administration. All form part of a community dedicated to the service to the poorer masses of rural areas.

(7) Mother-tongue as a Medium of Instruction:

The entire instruction upto the Postgraduate level is given through the mother-tongue i.e. Gujarati. However non-Gujarati students and teachers can teach or answer questions in Hindi language. Facilities for teaching Gujarati to students from any part of country or even world are available here so that they can join the Gujarat Vidyapith community as one of its members and freely communicate with its members.

Internal Evaluation:

The system of education is based on weekly tests as well as annual examinations and annual promotion is determined on the basis of the combined evaluation of the whole year.

In the higher education 40% of the evaluation is devoted to the weekly assignments, seminars, library work etc. The social field work, observation-visits to rural institutions, dissertation, participation in community life and social service camps, craft work, all the aspects of work in the Gujarat Vidyapith form an integral part of curriculum and are evaluated as such.

(8) Block-placement and Project Report:

Preparation of dissertation project report based on field investigation of socio-economic problem is an integral part of education in all courses. It is usually done in an area of block-placement in rural and tribal area.

School Education

The Vidyapith stands for an integrated system of the education of man from childhood to the end of life. With this object it is running a Basic-Primary and Post-Basic High School including Nursery section with hand-spinning and hand-weaving as principal and sewing as subsidiary crafts. It is an Experimental School. It is developed for giving a 12 years complete course of Basic and Post-Basic Education upto the present High School and Higher Secondary course of the Matric grade. At present, there is a Nursery class and I to XII grades. Three Ashram Schools from Standard IV to VIII are run in three village-centres, two in Kheda District and one in tribal area of Dharampur. In addition there is a primary school at Village Bochasan. Post-Basic High Schools (Std. VIII to X) at villages Bochasan, Bharel, Dethli, Ambheti are also run in addition to Post-Basic Higher Secondary School & Primary Teacher Training Colleges at village Bochasan.

The Vinit (Matric) External Examination for adults who could not go to high school, to continue their interest in General Knowledge, the Vidyapith, as a measure of continuing education, conducts the Vinit (S.S.C.) Examination since 1921 with good number of optional subjects. This is mainly intended to help people of rural and tribal areas in strengthening their education who could pass only 7th grade final examination of primary education and could not prosecute their studies further in high schools.

Rural Higher Education

The Vidyapith is conducting a residential college known as the Mahadev Desai Gram Seva Mahavidyalaya (College of Rural Service) with a three-year degree course for graduation in Social Sciences. The degree of Samajvidya Visharad (Bachelor of Social Sciences) is awarded to the successful students on completion of three years. This is perhaps the first undergraduate course in Social Work leading to degree in Social Sciences. It is now located at Gandhinagar Rural Campus at Village Sadra.

Residential community life and minimum two and a half hours daily manual work in Agriculture, Animal Husbandry and Ambarspinning crafts form an important part of the training of the students. The students themselves manage their affairs under the guidance of the teachers and get opportunities to have an outlook of life that may help them afterwards to lead a life useful to themselves and to the people in general. They are also imparted special training in the techniques of various types of social work through actual field work for two hours a day and block placement in rural and tribal areas for about 180 days stay in rural institutions including participation in work-camps. Participation in social service programme is an integral part of academic work and is given due weightage in evaluation for the purpose of degree. A dissertation project report of any socio-economic problem based on field work is also a requirement of the degree. The students are required to stay in the hostels on the campus and participate in its community life from 5.00 A.M. to 10.00 P.M. particularly in community prayers, community cleaning, preparation of meals, maintenance of sanitary arrangements etc.

Similar three years programme for training rural women in rural services centering around Home Science is located at Gandhinagar Rural Campus at village Randheja.

Post-Graduate Education

A home-study postgraduate course for Master's degree in social sciences by thesis was instituted since 1937. Graduates are admitted to work under a recognised guide, on a socio-economic problem for three years and given a degree of Samaj Vidya Parangat (Master of Social Sciences).

Postgraduate courses are offered in Social Anthropology and Rural Economics for M.A., M.Phil., Ph.D. level degrees. In addition, a two-year postgraduate course for intensive training in Social Work provides special training in Rural Social Work and leads to the degree of Samaj Karya Parangat (Master of Social Work). There are also facilities for M.A., M.Phil., and Ph.D. programmes.

There is also similar provision for Master's degree course in History, Culture, Gujarati & Hindi languages, Gandhian Philosophy at M.A., M.Phil. and Ph.D. level. It also conducts postgraduate courses in Archieves and Antiquity studies, as well as orientation courses on Indian cultural heritage through school museum for school teachers. There are also facilities for Certificate courses in Kannada, Marathi, Malayalam and Telugu.

Teacher Education

A Teacher Training College for training Hindi teachers is the only institution of its kind in the Gujarat State working for the development of teaching of Hindi to non-Hindi speaking students. The Gujarat State has about 2,000 schools where teaching of Hindi starts from Class V of the elementary school. In addition, there are about 3,000 secondary schools that require trained Hindi teachers. The college has specialised in B.Ed. (Hindi). The curriculum includes a special course on development of a national language and its problems and perspectives in relation to non-Hindi speaking areas. A Teacher Training College for preparing teachers in all subjects including Languages, Social Studies, Science and Mathematics, imparts training on the pattern of Graduate Basic Teachers' Training College. It includes training and experience of productive craft work for every trainee. It has a special programme of block teaching in villages. Training in conduct and participation in community life including management of various aspects of hostel-life forms an integral part of the curriculum. The curriculum includes a special course on Philosophy and Practice of Basic Education and Gandhian Thought.

One-year full-time and two-year part-time master level course leading to M.Ed. degree is conducted for those who wish to pursue further studies in Education after B.Ed. There is a provision for specialisation in Primary Education as well as Tribal Education in this course.There is a Research cell on Tribal Education for studies and research in problems of Tribal Education. Specialisation in Adult Education is also offered. There are facilities for M.Phil. and Ph.D. in relation to problems of Primary Education and Tribal Education, Social Education and Methodology of teaching Hindi language. An extension services unit runs on extension centre at Gandhi Memorial Ashram at Kocharab in Ahmedabad where weekly courses are held for advancement of high school students. It also conducts various refresher courses for Social Studies teachers and covers the Primary Teachers Training Colleges and Post-Basic Schools of Gujarat in its extension services.

Tribal Research and Training Institute

In order to facilitate effective work in connection with the development of the tribal people, studies in tribal life and culture need to be undertaken. Such studies should serve the practical purpose of preparing a basis for formulating realistic plans directed towards the improvement of social and economic conditions of the tribals. Apart from this, they should contribute to our knowledge of the tribes concerned, their culture, their way of life etc.

With these primary objectives in mind a Tribal Research and Training Institute has been set up in each State of our country which has a thick tribal population. Accordingly this Institute too was started in the month of June, 1962 for assisting the Government efforts to ammeliorate the conditions of the tribals of this State, who number about 45 lakhs. Although, in other States the sister Institutes have been directly run by the respective State Governments, this Institute has a distinctive privilege as since its very inception, its destiny has been put into the hands of Gujarat Vidyapith.

Tribal life in the Gujarat State is at various levels of culture. The large ethnic and cultural variety of these tribal people poses a number of problems which command the immediate attention of leaders, administrators, social workers and social scientists. As such, there have always been a heavy responsibility on this Institute in coping with the research work among tribal people of the State. However, under its research programme, this Institute has been able to complete 71 research projects, both of long-term and short-term duration. The number of research projects according to broad categories are as follows:

Sr. No.	Subject	No. of Research Projects
1.	Tribal Education	7
2.	Tribal Dialect	4
3.	Politics and Leadership	2
4.	Agriculture and Economic Development	15
5.	Impact of Tribal Development Blocks	4
6.	Tribal Ethnography and Culture Change	16
7.	Follow-up of Training	1
8.	Health Conditions	3
9.	Tribal Art and Craft	3
10.	Folklore	2
11.	Evaluative Studies	10
12.	Planning	3
13.	Forest and Economic Development	1
		71

The Institute conducts training programme both for senior and junior Government officials as well as tribal leaders. By this time the Institute has trained over 1000 Government officials.

The Planning and Evaluation Cell started with providing all necessary assistance and cooperation to the Project Administrator, Integrated Tribal Development Project, Danta-Amirgarh in the preparation of the ITDP report for the VI Five Year Plan.

A Museum, giving a vivid visual idea of life and culture of the tribals of this State has been set up at the Institute. The Institute's museum has been a place of much significance in the State. More than 500 objects are on display in the museum out of more than a thousand collections. A comprehensive catalogue of the museum artifacts is under preparation.

The Peace Research Institute

In October, 1969, on the occasion of Gandhi Centenary celebrations the Gujarat Vidyapith organised, with the cooperation of the University Grants Commission, Indian National Commission for Unesco, Council of Scientific & Industrial Research & Atomic Energy Commission, Unesco, a Seminar on "Science, Education and Non-violence," which was attended by some distinguished scientists and scholars from U.S.A., U.S.S.R., Canada, Australia and India.

The Seminar felt that a Research Institute for studies on Peace and Non-violence should be established in the Gujarat Vidyapith. This recommendation received support from the Unesco in the form of the library and fellowship grant for starting the Peace Research Centre in the Gujarat Vidyapith. Accordingly, Dr. Sadhana Dhruv visited the Peace Research Centres in Norway, France and England. The University Grants Commission helped to institute staff in the Centre.

With this background, the Peace Research Centre started working from December, 1971. This is perhaps the first interdisciplinary department on studies and research in Peace, Peace-Education and Non-violence, and new world order, Alternative development strategies, Social tensions, New society, World Education etc. as an integral part of the University system.

Gujarat Vidyapith Granthalaya

Gandhi Bhavan

For its own teachers and students and for research workers in Humanities and Social Sciences from other institutions and also for general public, the Vidyapith runs an open-shelf library. It contains over about 3,80,000 books in more than a dozen languages—Indian and Foreign—covering a large variety of subjects. Its sections on Indology and Literature are particularly rich.

A Gandhian Studies Hall has been opened to function as a national research centre on Gandhian Thought with collection of Books, Journals, Photographs, cassetts, files of Navajivan, Young India etc. and over 10,000 books on Gandhian Thought in several languages of India and other countries.

Research and Publications

The Vidyapith, under the inspiration and guidance of Mahatma Gandhi, has standardised the spelling in Gujarati through its Gujarati Dictionary known as 'Sarth Gujarati Fodni Kosh'. This spelling system is accepted by the University, the State Government and the S.S.C. (Matric) Examination Board, and is now accepted as a standard dictionary in Gujarati. The dictionary has run into five editions, each edition being an improvement upon the previous one. An abridged edition of the Sarth Gujarati Fodni Kosh known as Vinit Fodni Kosh is published for high school students. A pocket dictionary of Gujarati Spelling is also published.

To help the people to learn the official language of India, a Hindi-Gujarati dictionary was published in 1937 and it has run into third edition. Two other Dictionaries—Gujarti-Hindi and Sanskrit-Gujarati—have also been published.

Dictionary of old-Gujarati words, Kutchhi-Gujarati-English dictionary, dictionaries on Tribal Dialects like Bhili, Chodhari including a conversational guide for Bhili are published.

The Vidyapith has, from the beginning, stood for the mother-tongue as the medium of instruction at all stages of education, and for compulsory teaching of National Language—Hindi—upto the end of the collegiate courses. Accordingly, it has prepared and published booklets of technical terms for various subjects. Booklets of technical terms for Physics, Chemistry, Economics, Arithmetic and Literature have been published so far.

Since its inception Gujarat Vidyapith is doing pioneering work in the field of Research and Learning. The results of this work have been published. There are sixteen series of such publications in all, and about 500 volumes and monographs have been published till now. These publications have a very wide readership.

The articles published in Gujarati in 'Puratattva' research journal of the Vidyapith attracted the attention of eminent scholars like L.D. Barnett who wrote in the journal of Royal Asiatic Society, London, as follows:

> *"While 'Puratattva' seeks its inspiration in the 'Rashtriya Prana' it is not by any means blind to work of western scholarship, and review with appreciation 'The Cambridge History of India' and Mr. Pargiter's Ancient Indian Historical Tradition'. Despite certain, by no means negligible, shortcomings, there is good work here. A spate of genuine scientific investigation is arising in India, especially in history, and it deserves a hearty welcome."*

Propagation of Inter-State Language

Hindi and Indian Languages

Teaching and development of Hindi-Hindustani has been one of the objects of the Gujarat Vidyapith since its establishment in 1920. A special academy (Hindi Bhavan) was formed in 1946 and carrying on the work of propagating for Hindi in Gujarat and Bombay city till today through a network of 1100 centres in rural areas of all parts of Gujarat managed by honorary teachers and organisers. Over 30 lakhs students have learnt Hindi through this arrangement.

Rural Service Extension Centres

The Vidyapith is conducting 10 village service centres at Bochasan, Bhalel, Bhalada, Bamangam and Dethli (Dist. Kaira), Ambheti (Dist. Bulsar) and Sadra (Dist. Ahmedabad), Randheja (Dist. Gandhinagar) and Gota & Thaltej (Dist. Ahmedabad).

Krishi Vigyan Kendra

The Kendra imparts learning through work experience and hence is concerned with technical literacy. It also imparts training to those extension workers only who are already employed or to practising farmers. It will thus cater to the needs of those who are already employed or those who will be self-employed. The syllabus and training programme of the Krishi Vigyan Kendra will be tailored according to the felt needs, natural resources and the potential for agricultural growth in the area it intends to serve.

It has farm, dairy unit, laboratory and museum at the centre for demonstration and field work experience, and facilities for lodging and boarding for farmers.

Hostels for Community Life

There are four hostels on the campus at Ahmedabad with accommodation for 200 students including one Women's Hostel for 50 students. There is one boys' hostel at Sadra and one girls' hostel at Randheja. Every hostel is managed by students themselves under the supervision of wardens and residents of the hostels participate in cooking, cleaning, maintenance of foodgrains and vegetable store, prayer-assemblies etc. Hostel life is considered a valuable instrument of education and training in community life rather than just a place of residence, in all the programmes of studies and training in the Gujarat Vidyapith. In addition, there are 12 hostels run in Rural Extension Centres.

Adult Education Resource Centre and Continuing Education Centre

The Resource Centre for Adult Education for Gujarat State run by the Gujarat Vidyapith has promoted 800 voluntary organisations working in the field of social reconstruction, social transformation, social and tribal welfare and rural development. Meetings are held from time to time to undertake the work of adult literacy programme.

It has launched one of the biggest mass campaigns for adult literacy called 'Saksharta Abhiyan' through which 1500 villages have become literate for 15-35 age-group of their population. It has produced several Teaching-Learning Materials including Teaching Charts, Work Books, Teaching Materials, Prachar Sahitya, Reference Material & Post-literacy follow-up literature etc.

Wall-papers are regularly published in the monthly for Neo-literates named 'Lokjeevan'. These wall-papers cover topics: (1) Healthy living and Healthy habits (2) Social awareness (3) Earning through supplementary work (4) Prohibition (5) Removal of untouchability.

Exhibition: 50 charts & models for exhibition on removal of illiteracy are prepared.

Its Research Programmes include (1) Case-study programme on Ambheti Gram Seva Kendra in the Valsad district, (2) Impact of Adult Education in the Sanand Mahal in Ahmedabad District, (3) Impact of Adult Education in the Ahmedabad city in slums areas, (4) A study of the attitude towards social awareness of the adult learners in the Thaltej area of Ahmedabad.

Shardaben Women's Education Centre

A new centre for non-formal education of women is started in the Shahibag Campus in Ahmedabad. A 50-bed hostel for working women is under construction. It will also have a day-care centre for children.

Mahatma Gandhi Memorial Ashram at Kocharab

Gujarat Vidyapith maintains the memorial building where Mahatma Gandhi first opened his Satyagraha Ashram in 1914 soon after his arrival from South Africa.

There is a museum on Gandhiji's life and work as well as a small library of Gandhian books.

Khadi Training and Production Centres

These centres are production centres of Khaddar. In all seven centres are run by the Vidyapith. Two centres—one in the Ahmedabad Campus and the other at Kocharab Ashram—are in Ahmedabad and the remaining four are at Bochasan, Bhalada, Bharel, Dethli and Ambheti villages. These centres help local students by collecting their hand-spun yarn.

Thus the Gujarat Vidyapith has emerged as a comprehensive educational complex with specific discernible goals and values that are practised in day-to-day life, at all levels of education. It has a clear thrust for reconstruction of the rural society. A network of over 500 institutions run by graduates of the Gujarat Vidyapith have grown in villages of Gujarat which acts as feeder institutions for enrolment of its students. Maximum possible integration between teaching, research and extension has been achieved in all disciplines. □

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
December 1, 1990	National Symposium on Science and Technology in Ancient India.	Topics proposed to be discussed include Astronomy & Mathematics, Metallurgy, Medicine, Aeronautics, Engineering, Computer Science and Artificial Intelligence.	B.M. Birla Science Centre, Hyderabad	Dr. B.G. Sidharth, Director, B.M. Birla Science Centre, Adarsh Nagar, Hyderabad-500 463
July 21-26, 1991	Seventh International Meeting of University Administrators	Themes to be discussed are: (i) Standards of Professionalism in University Administrations; (ii) International Cooperation; and (iii) The Entrepreneurial University.	Conference of Registrars and Secretaries and Conference of University Administrators of the United Kingdom.	Dr. F.C. Verschoor, Chairman, Organising Committee, Congress Bureau, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands.

WORDS OF VISION

(Gandhiji's views as reflected in his convocation & other speeches in the Gujarat Vidyapith)

You should resolve in your mind that, if it came to that, you would earn your livelihood by doing the work of a scavenger or a weaver, but would do nothing unworthy in your life, would never stand at anyone's door begging ...To have light in the dark, it is enough to keep one lamp burning. Similarly it will be enough if you act like a worthy son, though you stand alone in your family ...It is for you to preserve the purity of your character. Your pleasures lie in your studies, in your physical strength and in your striving. You should learn to make use of your hands and feet...Our Vidyapith is a model for the whole of the country.

(15.6.1924)

Is there no coercion in laying down the rule that everyone must study English, Gujarati and Sanskrit? In the same way, we can say spinning will have to be learnt compulsorily...What is wrong in telling the pupils that they cannot remain in the school if they do not spin...? There is no coercion in this, but only good order. We should feel no qualms in presenting to children (students) what we believe to be essential for them. Those children and parents who do not like the thing should not join... I would certainly introduce a rule that a pupil should submit a certain quantity of yarn at the time of every examination.

If we wish to educate the masses, we may well give importance to the colleges but ultimately we must make them like *Gangotri*. The pupils trained in them should, at the end of their training, take themselves to the villages. Train them with this idea in mind. Even if only a few come forward, it makes no difference.

The parents fear that their children will not be able to speak good English. They do not mind if they speak bad Gujarati. Has it ever occurred to them that, if they learn through Gujarati, they will bring a little of the education into their homes too?

(1.8.1924)

Take it that you are committing a sin if your spinning-wheels lie unprotected against sun and rain. Just as you keep the apparatus in the laboratory clean and tidy, so should your spinning-wheel also be found. I certainly expet to find with you spindles, leatherholders, cotton, silvers, etc. of the best quality. ...You should surely have enough self-respect to secure these things on your own.

Let us learn to die for the country. Let us cultivate burning love for the country, for that is the meaning of national education.

Navajivan (10.8.1924)

If learning becomes merely a means of earning, it will lead to your degradation... Learning is intended to improve the body, mind and soul.

What is needed is a categorical assurance from you to the teachers and the management that you will not hesitate in the least to implement these principles (ideals of Vidyapith)... You will bring credit to the Vidyapith only if you do not deceive yourselves, your teachers, your elders and your country.

I have infinite patience to wait, if we cannot reach the goal without the sacrifice of non-violence and truth.

(11.1.1930)

The very essence of our civilization is that we give a paramout place to morality in all our affairs, public or private.

The strength to kill is not essential for self-defence, one ought to have the strength to die. When a man is fully ready to die he will not even desire to offer violence. And history is replete with instances of men who by dying with courage and compassion on their lips converted the hearts of their violent opponents.

(13.1.1930)

Unemployment and idleness of millions will lead to bloody strife. Khadi is the only alternative to this and not the so-called socialism, which presupposes industrialism. The socialism that India can assimilate is the socialism of the spinning-wheel. Let the village worker, therefore, make the wheel the central point of his activities.

All hours of the Gramsevak (village worker) minus eight hours of sleep and rest will be fully occupied with some work. He will have no time to waste. He will allow himself no laziness and allow others none. His life will be a constant lesson to his neighbours in ceaseless and joy-giving industry.

(31.8.1934)

BOOKS READ BY GANDHIJI

(List of holdings in Gandhi Adhyana Section)

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MEDICAL SCIENCE

2. Just, Adolf

Return to nature vol. 1 Tr. by Bebedict Lust 3rd Ed. New York, Translator, 1904.
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Life of Ramakrishna, Tr by E.F. Malcolm—Smith Calcutta, Advaita Ashram 1965.
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4. Vivekananda, Swami

Raja Yoga or conquering the internal nature 5th Ed. Calcutta, Visweswarananda, 1920.
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5. Ruskin, John

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Equality 11th Ed. New York, D. Appleton, 1910.
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Ninety three : a novel, Bombay, Wilco.
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11. Khayyam, Omar

Rubaiyat of Omar Khayyam : the astronomer Poet of Persia London, Macmillan, 1919.
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Jungle book, London, Macmillan, 1920.
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13. Lane, Edward William

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15. Sadi, Shaikh

Gulistan or Rose – garden, Tr. by Francis Gladwin. Allahabad, Ram Narain Lal, 1921.
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Gitanjali, London, Macmillan,
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19. Tolstory, Leo

Essays and letters : Tr. by Aylmer Maude, 3rd Ed. London, Oxford University Press, 1911.
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21. Bible

New Testament of our Lord and Saviour Jesus Christ London, B.F.P.S. 1933.
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22. Ghose, Aurbindo

Eight Upanishads. Pondicherry, Aurbindo Ashram, 1953.
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Origin and evolution of religion, Varanasi, Bharatiya Vidya Prakashan.
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FIRST CONVOCATION

INDIAN VETERINARY RESEARCH INSTITUTE IZATNAGAR, U.P.

The First Convocation of the Indian Veterinary Research Institute (Deemed University) will be held on **Monday, the 22nd October, 1990** at **11.00 A.M.** at I.V.R.I., Izatnagar, Distt. Bareilly, U.P.

All those who have passed final examination of Ph.D./M.V.Sc./M.Sc. degree programmes of the I.V.R.I. (Deemed University) and have completed all formalities, are invited to receive their degrees. They are requested to send their willingness to the undersigned to attend the Convocation latest by **8th October, 1990** indicating their name, roll number, name of the degree programme and date of completion thereof, mailing address, etc.

The rehearsal will be held on **21st October, 1990** at **3.00 P.M.** and those who will not participate in rehearsal, will not be allowed to receive degree in person. The entry into Convocation Hall will be strictly on the basis of **Invitation Card.**

H.C. Tripathi
DEPUTY REGISTRAR

Guidance and Consultancy Services in Data Processing

Objectives and Scope of the Scheme

1. The Guidance and Consultancy Services have been initiated by the ICSSR Data Archieves to help social science research scholars to tackle their data processing problems. Specificially the programme covers the following areas:
    (a) Devising of code books/card designs;
    (b) Selection of appropriate statistical techniques for analysing the collected data;
    (c) Programming assistance/machine processing of data.
2. The scholars will be assisted in identifying the most appropriate computer programme for their data processing. However, if no computer programme is readily available for this purpose, the Institute may help the researcher by developing fresh computer programme(s) if it has competent programmers on its staff.
3. In addition, depending upon the availability of expertise at a particular institution, the institution may provide guidance in other aspects of research, such as problem formulation, instrument construction, sampling, etc.

Eligibility

All social science researchers in need of these services are eligible to apply for assistance under this scheme. Applications from Ph.D. scholars will be entertained only when recommended by their supervisor/guide. In the case of other scholars applications should be recommended by the head of the Institution.

How to Apply

1. A researcher in need of these services may write to the nearest institution or the institution which he thinks appropriate for the prescribed application proforma.
2. All applications duly recommended should be accompanied by a copy of research proposal and a copy of the questionnaire/schedule, etc. used for the collection of data. If the scholar is in need of more than one type of assistance, the request should clearly indicate this.
3. In respect of requests pertaining to the selection of appropriate techniques for data analyses, a clear and precise statement about what the researcher wants actually to do with collected data should also accompany the request in addition to a copy of research proposal, questionnaire/schedule. The main purpose of the assistance in this area is to help the researcher in selecting among the several alternative statistical techniques of data processing, the most appropriate and economical one that does full justice to the data collected and help the researcher to realize the research objectives as articulated in the research proposal or developed later.

Financial Assistance

1. The researcher will be paid actual rail/bus fare limited to second class fare (including sleeper accommodation charges) for onward and return journey and per diem at the rate of Rs. 30 for a specific period needed for consultancy as indicated by the Institute.
2. The scholar should give clear indication whether the consultancy required is in respect of a research project financed by the ICSSR or otherwise. The ICSSR Data Art Archieves as well as other Guidance Centres will ensure that no scholar who receives financial assistance for travel and daily allowance from any other source, including the ICSSR under its other schemes, should charge his/her TA/DA to this scheme. A certificate to this effect from the scholar on the TA/DA bill will be obtained by the Institution concerned.
3. The scheme does not provide for charging the cost of computer time used for data processing under any circumstances.

Institutions where these facilities are available at present

With a view to making these facilities available to scholars near their normal place of work, as far as possible, a number of institutions located in different parts of the country have been indentified. These are:

1. Centre for the Study of Developing Societies, 29, Rajpur Road, Delhi-110 054.
2. Sardar Patel Institute of Economic and Social Research, P.B.No. 4062, Navrangpura, Ahmedabad-380 009.
3. Gokhale Institute of Politics and Economics, Pune-411 004.
4. Centre for Developments Studies, Aakulam Road, Ulloor, Trivandrum-695 001.
5. Tata Institute of Social Sciences, P.B. No. 8313, Sion-Trombay Road, Deonar, Bombay-400 088.
6. Centre for Social Studies, South Gujarat University Campus, Udhna-Magdalla Road, Surat-395 007.
7. Indian Institute of Technology, Department of Humanities and Social Sciences, IIT Post Office, Kanpur-208 016.
8. Giri Institute of Development Studies, B-42, Nirala Nagar, Lucknow-226 007.
9. A.N. Sinha Institute of Social Studies, Patna-800 001.
10. ICSSR Data Archieves, 35, Ferozshah Road, New Delhi-110 001.

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Rationalising Fee Structure in Engg. Institutes

With the government determined to do away with capitation fee in engineering colleges and polytechnics and to have centralised admission at the state level based on merit, two sets of technical institutes are likely to be created.

While government-financed colleges may levy higher tuition fee than the Rs. 500 being charged annually so far, private engineering colleges and polytechnics—which do not receive government grants—may charge upto Rs. 12,000 and Rs. 8,000 respectively per year. This is the fee suggested by the All-India Council for Technical Education.

Mr. Chimanbhai Mehta, minister of state for human resource development, said a five-member task force, headed by Prof. C.S. Jha of IIT, Delhi with representatives of the ministries of banking and HRD, UGC and the AICTE will work out a realistic fee structure for technical institutes, excluding IITs.

Though the AICTE, with its statutory powers, had recommended a uniform annual tuition fee of Rs. 12,000 for engineering colleges and Rs. 8,000 for polytechnics, it was felt that no parent or student would accept a fee hike from the prevalent Rs. 300 and Rs. 500 annually for polytechnics and engineering colleges to Rs. 8,000 and Rs. 12,000. The ministry is, therefore, looking for a realistic increase in fees.

By rationalising the fee structure and having state-wise centralised entrance to technical institutes, the government hopes to eliminate capitation fee in colleges. Guidelines for admission have been issued to all states and Union territories. It has been stipulated that a minimum of 60 per cent in physics, chemistry and maths is needed for entrance to engineering colleges. Maharashtra and Gujarat have no separate exam but the admission is centralised and a minimum of 60 per cent in needed.

Andhra, Karnataka, Assam, Delhi, Bihar, Tamil Nadu, U.P., Punjab, West Bengal, M.P., and Rajasthan conduct entrance exams to the technical institutes but minimum marks required for taking this entrance test varies. The ministry's guidelines clarify that where an entrance examination is to be held, qualifying marks are needed.

For admission to the polytechnics the government has spelt out qualifying of 60 per cent with science and maths.

SPACE Convention at Indore

The First National Convention of Society for Promotion of Academic and Career Excellence (SPACE) on Continuing Education of University and College Teachers was recently held at the Academic Staff College (ASC) of Devi Ahilya University, Indore. Inaugurating the convention Prof. V.G. Bhide, Director, Inter-University Consortium and Ex-V.C, Poona University, said that there was a need for the motivation and dedication of teachers and follow up of the ASC training programmes. He emphasised the role of education and particularly that of teachers in national development. A teacher should not only cover the syllabus but also teach things which were not covered by the syllabus, but related to Society, he said.

Prof. M.S. Sodha, Vice-Chancellor, Devi Ahilya University, who presided, said that there could not be a standard model for college teaching. He called upon the new teachers to work as apprentice with the senior teachers. Prof. Sodha said that teaching should be participatory and teaching aids should be used to make it more effective. He said that there was a need of such professional societies for promoting excellence among teachers.

Delivering the keynote address Prof. B.K. Passi, Head, School of Education said that due to knowledge explosion in education technology it was necessary to organize institutional inservice training at least once in three years.

Prof. N.C. Jain, Director, ASC and President of the Society welcomed the Chief Guest and the participants. In his brief report of the Academic Staff College he said that the ASC, Indore had organized 22 courses training nearly 700 teachers of different disciplines from different states of the country.

The SPACE has been formed to provide a linkage between the participants of Orientation Programmes & Refresher Courses, Academic Staff College and Resource Persons. This is a voluntary academic society self financed by the participants of ASC Courses and its Resource Persons. The society has nearly 100 members drawn from different states.

Over 100 participants including resource persons and teachers of courses organized by ASC, attended the convention.

World Bank Aid for Technical Education

A 10-year programme to improve technical education in India with a World Bank loan of $300 million will be implemented shortly.

The Technician Education Investment Programme, to become effective from this year, would also cover polytechnics spread all over the country. This was revealed by Dr. Sartaj S. Mathur, Minister of Education in the Indian Embassy in Washington recently. Dr. Mathur said there was an urgent need to upgrade technical education in India to meet modern-day needs of industry.

Under this programme an exchange of technical and engineering skills between institutions in India and the USA would be arranged in a bid to expose the latest knowledge in these areas to Indian students. Hitherto, Dr. Mathur said, collaboration had been confined only to the Indian Institutes of Technology but now this facility is sought to be extended to smaller engineering colleges and polytechnics.

Dr. Mathur feels that although the minimum qualifications for entering technical institutions both in India and the USA was grade 12, the technicians in the USA learnt much more than Indians. This was because practical training in the USA played a vital role in shaping the future of a technician.

One of the main features of the technical education in USA was the close links the institutions had with industry. This was woefully lacking in India. "If only this good working arrangement between the engineering institutes and industry were to be injected into our polytechnics, it would greatly help in the industrial advancement of India," Dr. Mathur said. He hoped that this programme would take care of this aspect of technical study and provide the necessary exposure for the technical graduates.

Dr. Mathur said under this programme a group of five people from different institutions in the USA would visit India early next month. They are expected to go round engineering colleges and polytechnics in Bombay, Madras, Bangalore, Cochin, New Delhi and also take a look at the various industries associated with such technical institutes. The return visit of some technical personnel from Indian polytechnics would most probably take place in January 1991.

Dr. Mathur said he was also arranging for collaboration at the academic and practical levels between mid-level universities otherwise known as Regional Engineering Colleges and U.S. Community Colleges which specialize in technical education.

According to him, 8 to 10 States could be chosen for exchange programmes. He said he had initiated talks in this regard with a group of universities in the Midwest Universities Consortium for International Activities (MUCIAN), IOWA, and the response was very encouraging.

Workshop on Interviewing Skills

All India Association for Educational Technology plans to organise a Workshop on Interviewing Skills at New Delhi on 1 and 2 November, 1990. The workshop is being held in conjunction with the International Conference on Educational Technology. The focal themes of the workshop will be Skills of Interview, Probing, Interviewer in focus, Technology in Selection Video aided, Role play and Simulation rich programme. An eminent group of management experts including S.S. Kulkarni, M. Mukhopadhyay will be the faculty for the workshop which will be directed by S.C. Mital, who has a rich experience of 21 such workshops all over the country.

Senior executives involved in selection interview—Vice-Chancellors, Pro-Vice-Chancellors, Deans of Faculties & Heads of Departments/Principals of Colleges and Executives from Banks and industries will participate in the workshop. Participants may remit a delegate fee of Rs. 1000/- payable by Cheque/Draft in favour of "All India Association for Educational Technology" to Shri S.C. Mital, Course Director C-I/40, Pandara Park, New Delhi-110 003.

International Literacy Day

The Bharathidasan University, in co-operation with govt. depart-

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Women's Studies Programmes and Women's Organisations

The Association of Indian Universities (AIU) is preparing a Directory of Women's Studies Programmes and Women's Organizations in India in collaboration with the Commonwealth of Learning (COL), Vancouver, Canada. The Association invites all such organizations working in any part of the country to get in touch with the Secretary at the following address for their inclusion in the proposed Directory:

The Secretary
Association of Indian Universities
AIU House
16 Kotla Marg
New Delhi 110 002

ments, voluntary agencies, colleges, schools, mass media, private sectors and the general public celebrated the International Literacy Day in Trichy on 8th September, 1990 by conducting a mass rally and a public meeting. The rally was inaugurated by Dr. S. Muthukumaran, Vice-Chancellor of Bharathidasan University in which 6000-7000 people comprising students, teachers, adult education functionaries and beneficiaries, educated youth and general public, participated. The importance of literacy, education, women's education, eradication of illiteracy, etc. was emphasised.

Presiding over a function gotup for the occasion, Prof. Muthukumaran stressed on the importance of International Literacy Year and International Literacy Day. He also referred to the adult and extension education activities of the Centre for Adult, Continuing Education and Extension and the National Service Scheme of Bharathidasan University. He called upon all the government and non-government agencies to join together and do services in order to bring about cent percent literacy in Trichy. Shri K. Dheenadayalan District Collector, Trichy District, in his address, mentioned education as the basic and important instrument for social, economic and cultural development of the individual and nation. He called upon all the government and non-governmental agencies, teachers, students and educated youth to involve themselves in the literacy work.

International Conference on Educational Technology

"International Conference on Educational Technology: The Futures" will be hosted by the All India Association for Educational Technology from 31 October to 3 November, 1990 in New Delhi. The major themes are media, computers and emerging technologies, educational softwares, research and innovations in educational technology and planning and management of education.

The Conference would run parallel sessions including higher and professional education. It would be supported by a major national exhibition on educational technology. There would also be a few specialist workshops on Technology of Selection and Interview, Computer Communication and Video Script writing.

Further details can be obtained from the All India Association for Educational Technology, Lady Irwin College, Sikandra Road, New Delhi-110001.

FAO/UNDP Consultant

Prof. F.W. Lancaster, Graduate School of Library and Information Science, University of Illinois, Urbana-Champaign, USA would be visiting India as FAO/UNDP consultant for four weeks beginning last week of Nov.-Dec. 22, 1990. His consultancy has been sought by the Director, National Academy of Agricultural Research Management (NAARM), Rajendranagar, Hyderabad 500 030 under the FAO/UNDP Advanced Centre on Agricultural Education and Research Management. Prof. Lancaster would be the resource person for a five days workshop on **"Bibliometrics and Scientometrics tools in Measurement of productivity in Agricultural Research"** being organised at NAARM from December 11-15, 1990. Mr. Ravi B. Gaddagimath, Librarian and Head, Information and Documentation Unit, NAARM, Hyderabad is the Workshop Coordinator and contact person for further information.

MCJ Course in Telugu

The Telugu University has decided to introduce Master of Communication and Journalism course in Telugu from the next academic year. It has also been decided to conduct a two week workshop for the benefit of rural Journalists in Telugu next year. This was disclosed by Dr. C. Narayana Reddy, Vice-Chancellor, Telugu University recently. He also informed that a cultural museum of Telugus namely 'Telugus Through Ages' would be set up at the Telugu University complex.

Rural University

Mr. Sunderlal Patwa, the Madhya Pradesh Chief Minister announced that a university would be opened at Chitrakoot to impart employment oriented training to the rural youths of the state. This university would be opened under the Pandit Deendayal Upadhyay Shodh Sansthan.

News from UGC

Countrywide Classroom Programme

Between 8th October to 15th October, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

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"Classical Mechanics – 2

Galileo's Principle of Relativity – B"

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11.10.90

"COBOL – 4 : Flow Charting"

"Paleolithic Society"

"I"

12.10.90

"Beyond Vision"

"Rapid Rural Appraisal – Learning from the Villagers – II"

"Forest Policy 88"

13.10.90

"Rasa Ranjita : Understanding Indian Dance – 3 Kuchipudi"

"Museums and Museology"

"Wiring Household Plugs"

14.10.90

No Telecast

15.10.90

"Classical Mechanics – 3 : Newton's First Law"

"Raising Morale"

"The Oceans"

2nd Transmission
4.00 p.m. to 5.00 p.m.

8.10.90

"Nuclear Techniques in Material Research"

"Management IX : Humanising Work"

"Perestroika in Agriculture"

9.10.90

"Molecules and Models"

"Public Relations"

"Save a Life"

10.10.90

"Thermal Power Generation"

"Science for People"

"Plant Fossils – IV : Biospheres of the Past"

11.10.90

"Computer Memory – II : Sequential Access Storage"

"Impact of October Revolution on Indian Literautre – I"

12.10.90

"Cosmic Sparklers"

"Trends in Brain Research"

"Micro-organisms : Harmful Activities"

13.10.90

"Chinese Paintings"

"Bhavai : The Folk Drama of Gujarat"

14.10.90

No Telecast

15.10.90

"Measuring the Size of Stars"

"Management – X : Management Information System"

"Le Metro"

News from Abroad

Reforming Teacher Training in Russia

Wide-ranging reforms for teacher training are reported to have been drawn up in the Soviet Union. According to the Russsian Federation's new minister of education, Edward Dneprov, the reforms are the foundation for radical changes planned across the educational spectrum.

Western classroom methods, teacher training styles and quality control all feature in Dr. Dneprov's plans. But student loans and competitive funding are definitely not on the agenda. There are no proposals to increase the number of school-leavers going on to higher education–presently around 18 per cent of the total.

Dr. Dneprov outlined his plans for a more effective and relevant teacher training system during a conference at Oxford organised by International Movement Towards Educational Change (IMTEC). He also exchanged his ideas with higher education under secretary, Alan Howath, at a meeting in London.

He explained that the proposed changes would be piloted in the education departments of Soviet universities before being introduced into the country's 95 higher pedagogical institutions and 380 "lower grade" teacher training colleges.

"One of the main drawbacks with the present situation is that the main contention is attached to subject training, and psychology and the science of teaching is of less importance.

"We would like to introduce more psychology and more pedagogy into the institutions as well as sociology, anthropology and 'cultureology', to give our teachers a better educational background. We also hope to increase the amount of teaching practice in schools to a year," he said.

The thurst of these plans is to

increase the efficiency and quality of education in the Soviet Union. Dr. Dneprov also hopes the system will become more flexible and more suited to students' needs. "We are planning quality control of our teacher training colleges and of all higher education institutions. But we do not wish our system to remain as standardised as it has been.

"We want students to get their education in different periods of time, offering various diplomas which require study from two to five years."

More courses will not, however, mean more students or new methods of funding. Dr. Dneprov considered the present number of Soviet students to be "about right", and he totally rejected the idea of top-up loans. "Our task is to raise the quality of education without enlarging the number of students. Higher education in the Soviet Union is completely free, and although there have been some suggestions that students should pay, we have no plans to do that."

Ultraviolet Radiation and Our Eyes

Researchers at the University of Queensland and the Queensland University of Technology in Australia are developing a precise tool to measure the effect of ultraviolet radiation on human eyes. They say the study is timely in view of the depletion of the ozone layer and worldwide concern about the consequences of ultraviolet radiation exposure, particularly to the skin and eyes.

The researchers are testing a plastic detector in the form of a contact lens, to be worn in the eyes, that will make what they believe is the most accurate measure yet of UV radiation on the eye.

The researchers are University of Queensland Lions Professor of Ophthalmology, Professor Lawrence Hirst, and a QUT team including, Physics Department lecturer, Dr. Joe Wong, Optometry Department senior lecturer, Mr. Michael Collins, and a physics student, Mr. Michael Sydenham.

Professor Hirst said that the study had received $37 000 in grants from the University of Queensland Foundation and the Ophthalmic Research Institute of Australia.

He stated that accurate assessment of UV at the eye surface would provide valuable information about the development of many sight-threatening diseases. "Initial results have been encouraging and we believe human clinical trials could be under way next year," he said.

Professor Hirst, also executive director of the Australian Foundation of for the Prevention of Blindness, said UV exposure in the 280-320 nanometer range was believed to be involved in the development of a number of conditions that caused blindness. These included pterygia, growths on the cornea or eye crystal, that were a common cause of pain to nearly five per cent of Queenslanders. Pterygia was difficult to remove, as was the cancer known as squamous cell carcinoma, that had been linked to UV and affected up to two people in 100000.

Ultraviolet radiation also might contribute to cataract formation and also had been less directly implicated in the retinal disease, senile macular degeneration, which caused blindness.

Dr. Wong said the contact lens being developed by the group was made from CR-39 (allyl diglycol carbonate), a plastic commercially available and used in sunglasses and spectacle lenses. The material had the property of remaining transparent after exposure until chemical treatment that could determine very accurately the amount of UV light the lens had experienced.

Professor Hirst said that the study would look at ultraviolet exposure resulting from work situations as well from the natural sources.

Further information can be obtained from: Professor Hirst, Dr. Wong, University of Queensland, Qld, Australia, 4072.

विद्यार्थियों/अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातकोत्तर स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रशंन-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपलब्ध सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

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Book Review

A Handy Reference Tool

P.C. Bansal*

Aggarwal, J.C. and Aggarwal, Sarita. Education In India: A Comparative Study of States and Union Territories, New Delhi, Concept Publishing Company, 1989. Pp. 120. Price Rs. 100/-.

The book under review is a handy reference volume and provides information about various facets of education in the states and union territories in India. It covers the period 1950-51 to 1986-87. The source of information is Ministry of Human Resource Development, Department of Education publications like Selected Educational Statistics 1986-87, Annual Report of Department of Education 1988-89, Fifth All India Survey: selected statistics, National Council of Educational Research and Training (1989), and Development of Education 1986-88: National Report of India, National Institute of Educational Planning and Administration (1988). The authors credo is 'To know Thyself, Compare Thyself with others'.

Statistics comprises the science of decision making in education in the phase of uncertainty. However, the statistics in the present stage of development is not in a position to handle all situations involving uncertainties. It is hoped that as new methods are developed, modern statistics shall provide the framework for looking at situations in a logical way. But the statistics has to be used with caution. The authors stress the need to adopt a uniform system of maintenance of statistics. Though the reference date i.e. 30 September, 1986 is the same, there are differences in the statistics compiled by Department of Education and National Council of Educational Research and Training in their publications.

In the opening chapter, the authors provide an overview of administration, management, planning and financing of education in India. Since 1976, with the 42nd amendment to the Constitution, education has been made a concurrent subject, and the administration of education is a shared responsibility of the centre and state governments. The Department of Education and its agencies which operate as part of Ministry of Human Resource Development deal with various aspects of educational development in policy making. It also provides direction and guidance to the authorities dealing with education in the various state governments and union territories' administration with regard to formulation and implementation of education plans and programmes. Monitoring the progress of these programmes is also its responsibility at the centre. Broadly, the school education is predominantly a local-state partnership, while higher education operates as an area of centre-state partnership. For planning education, the Planning Commission at the centre and the State Planning Departments decide the policy and approach to be adopted for development of education in the country. The planning and monitoring division in the department of education at the centre works in close liaison with the Education Division of the Planning Commission. On the basis of the guidelines issued by the Planning Commission draft five year plans and annual plans are prepared by the central ministries and state governments. These plans are discussed and examined at various levels before being finally approved for implementation.

In education, planning and policy making at the national level is guided and coordinated by the Central Advisory Board of Education. The bulk of the expenditure, that is, about 65 percent is borne by the states. Other departments both in the centre and states also incur some expenditure on education.

The National Policy on Education (NPE) 1986 called for evolving a long term planning and management perspective of education and its integration with the country's development and manpower needs. It pleaded for decentralisation. It suggested the creation of an Indian Education Service, State Advisory Boards of Education and District Boards of Education. States have to pay attention for the training of educational planners, administrators and head of the institutions. It also pleads for establishing the principle of accountability in relation to the given objectives and norms. The authors are of the view that the government and

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**Former Scientist (Psychology),*
Ministry of Defence,
B-58, Inder Puri,
New Delhi-110 012.

the Community, in general, will find funds for such programmes as the universalization of elementary education; liquidation of illiteracy; equality of access to educational opportunities to all sections throughout the country; enhancing the social relevance, quality and functional effectiveness of educational programmes; generating knowledge and developing techniques in scientific fields to self-sustaining economic development; and creating a critical consciousness of values and imperatives of national survival. Education will have to be treated as a crucial area of investment for national development and survival. As the actual level of investment has remained far short of the target (about 4 percent), it is important to find funds for the programmes laid out in NPE.

Statistical information is provided about institutions and enrolment at various levels states and union territories wise and for India as a whole. Comperative data is given for states with regard to vocational courses at the +2 stage, pupil-teacher ratio at various levels, percentage of trained teachers, secondary teacher training institutions, per capita budgeted expenditure on education, percentage of budgeted expenditure on education, one teacher schools and literacy rates of states and union territories. The development of education in India, during plan period 1950-51 to 1986-87 is included. The information is given in tabular form and graphically.

Tamil Nadu is in favourable position with regard to vocational facilities at the +2 stage. Other states have to make serious efforts to catch up with Tamil Nadu. Regarding pupil-teacher ratio, Sikkim is in favourable position at primary and middle school stage. The states in unfavourable position at these two levels are Andhra Pradesh and West Bengal. The fifth All India Survey places Gujarat in the unfavourable position at the primary stage. At the high school stage, Orissa is in favourable position while Department of Education puts West Bengal in an unfavourable position, NCERT survey assigns it to Gujarat. At higher secondary level, Karnataka is in favourable position, while Maharashtra and Uttar Pradesh are in unfavourable position. NCERT survey puts Punjab in the favourable position. In some states a number of untrained teachers are working. Uttar Pradesh has the maximum of teacher training colleges. Lakshdweep has the highest per capita budgeted expenditure on education i.e. Rs. 602.27, while Bihar has the lowest per capita budgeted expenditure i.e. Rs. 63.03. Five states are spending below the country's average of Rs. 112.77. Kerala spends 33.6 percent of its budgeted expenditure on education, whereas for Lakshdweep, it is 12.7 percent. As many as 19 states/union territories are spending less than the Indian average of 23.8 percent on education. The highest percentage of one-teacher school is in Dadra and Nagar Haweli. Delhi has the lowest percentage. In India there are 1,48,033 one-teacher schools. There is a need to provide at least one additional teacher in these schools. Regarding literacy rate, in 1971, the favourable position was for Chandigarh and Kerala State. In 1981, these positions were again enjoyed by Kerala and Chandigarh. The unfavourable position was occupied by Sikkim in both 1971 and 1981, but during that period, the literacy gain has been about 17 percent, that is, more than for any other state.

The information about number of institutions and enrolment at various levels in various states and union territories is helpful in establishing new institutions at various levels and attracting more students under various programmes. During 1986-87, 43.3 percent of the total budget on education was spent on primary education, for secondary education, it was 31.5 percent, 14.4 percent for higher education (general) and for technical education, it was 4.6 percent. Allocation of funds in the seventh five year plan shows that 33.54 percent of the allocated sum was spent on elementary education, 47.37 percent on general education, 12.49 percent on technical education and 6.6 percent on adult education.

There has been an increase in the number of institutions at all levels during the planned period from 1950-51 to 1986-87. However, there has been more expansion at tertiary level (general and technical) than at elementary level. There has been an increase in enrolment at the elementary stage from 43.1% to 96%, at the middle school stage, the increase has been from 12.9 percent to 53.14 percent of the total population in the age group of 6-11 and 11-14 years. However, serious efforts are to be made to induce more girls to join school. There has been rapid increase in general and technical institutions, at higher level both in number of institutions and in enrolment. The two main problems in the planning and administration in education are high dropout rates and rapid increase in population.

The book draws attention to the need of decentralisation in administration and micro level planning preferably at the district level to minimise imbalances. There are variations in the educational facilities not only in different states but also in different regions within the same state. In order to achieve optimal results, it is imperative that minimum facilities are provided in all institutions and to all students. The book will be of immense value to educational planners, policy makers and administrators.

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One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for awards of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department of Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A list of Research Scholars registered for Doctoral Degrees in Indian Universities.

SOCIAL SCIENCES

Library & Information Science

1. Divatankar, Nivrutti Ishwara. *National Information Centre for sugar industry: A development plan.* Shivaji. Dr. S.R. Gunjal, Prof. and Chairman, Department and Studies and Research in Library and Information Science, Gulbarga University, Gulbarga.

Psychology

1. Bhaijee, Rahul. *Psychosocial predictors of political behaviour.* HS Gour. Dr. S.J. Singh, Department of Psychology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Sociology

1. Patel, Mamta. *Victimisation of aged.* HS Gour. Dr. Ramji Ray, Lecturer, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Social Work

1. Rana Bhanu Shamsher Jangbahadur. *Habitual offenders.* HS Gour. Dr. B.S. Chilad, Lecturer, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

2. Tandon, Raju. *Jail prabandh aur sudharatmak sevayen: MP ke jail prabandh evam sudharatmak sevayon per ek adhyayan.* HS Gour. Dr. D.K. Mukharya, Reader, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Political Science

1. Pawar, Tanaji Ganpati. *Ideology and politics of the shetkari sangatanah in Maharashtra.* Shivaji. Dr. A.S. Chousalkar, Department of Politics, Shivaji University, Kolhapur.

Economics

1. Vyas, Seema. *Institutional changes and social justice in South West Madhya Pradesh.* Devi Ahilya. Dr. (Smt.) Nirupama Nagar, Asstt. Prof., Department of Economics, P.M.B. Gujarati Arts and Law College, Indore.

2. Vyas, Sushma. *Khadi gramodyog mein viniyog utpadakta evam rojgar: Ek adhyayan M.P. ke vishesh sandarbh mein, 1960-85. Devi Ahilya. Dr. R.P. Gupta, Prof., Department of Hindi, Govt. Post-Graduate College, Mhow.*

Law

1. Mandlik, Arvind. *Offences relating to violance against female in Madhya Pradesh with specific reference to backward area.* Devi Ahilya. Dr. G.S. Kasliwal, Prof., Department of Law, Govt. Arts and Commerce College, Indore.

Commerce

1. Jadhav, Tanajirao K. *A study of materials management in the Civil Hospital of Sangli.* Shivaji. Dr. B.N. belagali, G.A. College of Commerce, Sangli.

2. Kulkarni, Ashok V. *Pattern of financing to small scale industries in Sangli District by co-operative banks.* Shivaji. Dr. B.N. Belagali, G.A. College of Commerce, Sangli.

3. Mathur, Mohit Mohan. *A study of working of U.P. handlooms.* BHU. Dr. K.K. Jaiswal, Department of Commerce, Banaras Hindu University, Varanasi.

4. Mishra, Mamta. *State control of public enterprises in India.* BHU. Dr. K.N. Sharma, Department of Commerce, Banaras Hindu University, Varanasi.

5. Pandey, Shiva Nand. *Personnel policies and practices in coal mines of Singrauli: A case study.* BHU. Dr. D.S. Mishra, Department of Commerce, Banaras Hindu University, Varanasi.

6. Pant, Arati. *Foreign capital participation and NRI's investments in India.* BHU. Dr. A.R. Tripathi, Department of Commerce, Banaras Hindu University, Varanasi.

7. Rajan, J. *Impact of Matsyafed in the socio-economic development of schemes in Kerala.* Kerala. Dr. K. Sreeranganathan, Lecturer, Department of Commerce, Govt. College, Attingal.

8. Rajan, J.B. *Impact of credit market structure on the earning capacity of small scale fishing unit.* Kerala. Dr. T. Edwin, T.C. 13/339, Kunnukuzhi, Trivandrum.

9. Ramachandran, K.K. *Housing finances in Kerala.* Kerala. Dr. M.K. Ramachandran Nair, Reader, Institute of Correspondance Courses, University of Kerala, Kariavattom.

10. Singh, Ramesh Kumar. *An appraisal of the working of Agricultural Development Branches (ADB's) of the State Bank of India: A case study of Varanasi Region.* BHU. Dr. K.N. Sharma, Department of Commerce, Banaras Hindu University, Varanasi.

11. Singh, Ravindra Kumar. *KSRTC: An appraisal of its working.* BHU. Dr. J.S. Mathur, Department of Commerce, Banaras Hindu University, Varanasi.

12. Singh, Ravindra Kumar. *Small scale industrial units in Varanasi District: A study of entrepreneurial profile.* BHU. Dr. V.S. Singh, Department of Commerce, Banaras Hindu University, Varanasi.

13. Siraj Ahmad. *Managerial resource development in public sector: A case study.* BHU. Dr. Dipak Malik, Department of Commerce, Banaras Hindu University, Varanasi.

14. Srivastava, Pramod Prakash. *Role of State financial institutions in promoting entrepreneurship among backward regions of U.P.* BHU. Dr. M. Ahmad, Department of Commerce, Banaras Hindu University, Varanasi.

15. Srivastava, Ritu. *Financing of asset formation in industrial enterprises in India.* BHU. Dr. A.R. Tripathi, Department of Commerce, Banaras Hindu University, Varanasi.

Home Science

1. Gupta, Suniti M. *A study of the Vitamin A status of pre-school children 0-5 years old from different S.E.S. groups suppering from upper-respiratory tract infections and diarrhoeas.* Devi Ahilya. Dr. (Smt.) Kamlesh Sharma, Prof., Department of Home Science, Govt. new Girls College, Indore and Dr. (Smt.) Priti Taneja, Assoc. Prof., Dr. Baba Sahib Institute of Social Science, Indore.

2. Saxena, Rekha. *Factors effecting decision making of consumer buying practices in Kanpur City.* BHU. Dr. (Mrs.) N. Sant, Department of Home Science, Banaras Hindu University, Varanasi.

Management

1. Reghuvaran Pillai, R. *Evaluation of corporate strategy of selected public undertakings in Kerala.* Kerala. Dr. C.N. Purushothaman Nair, Prof., Department of Commerce, University of Kerala, Trivandrum.

HUMANITIES

Philosophy

1. Nair, Geetha S. *Socio-religion views of Mahatma Gandhi and Srinarayana Guru.* Kerala. Dr. K. Sarat Chandran, Prof. and Head, Department of Philosophy, University of Kerala, Kariavattom.

Language & Literature

1. Beena, C.P. *Discourse analysis of newspaper reports and scientific articles.* Kerala. Dr. E.V.N. Namboodiri, Department of Linguistic, University of Kerala, Kariavattom.

English

1. Babar, Ashok Vishwambhar. *A study off some collections in Indian English.* Shivaji. Dr. D.K. Patil, Night College of Arts and Commerce, Ichalkarnji, District Kolhapur.

2. Dillon Ronald, Stanley. *A study of Metaphor in Indian English.* Shivaji. Dr. D.K. Patil, Night College of Arts and Commerce, Ichalkarnji, District Kolhapur.

3. Rami, Bharati. *T.S. Eliot and the neo-classical concept of poetry.* Vikram. Dr. T.S. Tatke, Ram Niwas Lodge, Near Ashok Talkes, Makshi Road, Ujjain.

4. Shukla, Tanuja. *Social criticism in the plays of John Galsworthy: A study.* Vikram. Dr. B.G. Tandon, Reader, School of Studies in English, Vikram University, Ujjain.

Sanskrit

1. Choubey, Ashok Kumar. *Vaidik vangmaye etidya sameeksha.* BHU. Dr. Hridaya Ranjan Sharma, Department of Veda, Banaras Hindu University, Varanasi.

2. Mishra, Bharat. *Karakatatyameya vimarshah.* BHU. Dr. Chandrabhanu P. Umashastri, Department of Vyakaran. Banaras Hindu University, Varanasi.

3. Mishra, Umapati. *Myadhyanindan samnhitaya Vedadeepmadhye viniyog vadhyanam sameeksha.* BHU. Dr. kailash Chander Sharma Dave, Department of Veda, Banaras Hindu University, Varanasi.

4. Mistry, Sheela Diniyar. *Investigation of some salient features of Dharmashastra in comparison with principles of sociology, equity and jurisprudence of personal laws with special reference to provisions relating to women.* Shivaji. Dr. P.P. Apte, 1999, Sadashiv Peth, Tilak Road, Pune.

5. Sarswati, Shukradevanand. *Bhamarsha vimarshah*. BHU. Dr. Ramesh Chander Pandey, Department of Vyakaran, Banaras Hindu University, Varanasi.

6. Sharma, Ranjan Kumar. *Dinganag Praveen Nyaya Pravesh kee haribhadra Suri krit kritti ka sameekshatmak adhyayan*. BHU. Dr. Kamlesh Kumar Jain, Department of Jain Baudh Darshan, Banaras Hindu University, Varanasi.

7. Shukla, Rama. *Abhidnammpitke chitt vimansa*. BHU. Dr. Surya Prakash Vyas, Department of Jain Baudh Darshan, Banaras Hindu University, Varanasi.

8. Tiwari, Arvind Kumar. *Haribhadra Suri krit Yogshatak evam Ayurveda*. BHU. Dr. L.D. Dwivedi, Department of Ayurveda Samhita, Banaras Hindu University, Varanasi and Dr. R.P. Dwivedi, Department of Sanskrit, Banaras Hindu University, Varanasi.

Hindi

1. Pingley, Rachana J. *Nagarjun, Bhairav Prasad Gupta, Bhishma Sahani va Amritrai ke upanyason mein samajik yatharth ka swaroop*. Devi Ahilya. Dr. (Smt.) Sheela Vyas, Head, Department of Hindi, Indore Christian College, Indore.

2. Rana, Meena. *Swatantrayottar Hindi natakon per lokdharmi natya shailly ka prabhav*. Devi Ahilya. Dr. Vilas Gupta, Asstt. Prof., Department of Hindi, Govt. Nutan Girls College, Indore.

Tamil

1. Geetha, C.V. *Folklore in Tamil novels with special reference to the novels of Janakiraman, Rajanarayanan and Rajam Krishnan*. Kerala. Dr. P. Doctor Nazeemdeen, Department of Tamil, University of Kerala, Kariavattom.

Malayalam

1. Sadashiva, B. *Parthisubha's Yakshagana Prasangas: A descriptive analysis*. Kerala. Dr. M. Rama, Department of Linguistics, University of Kerala, Kariavattom.

Kannada

1. Anchan, Ravi. *Mumbaiyalli yakshaganada hattu mattu beiavanige*. Bombay. Dr. T. Vasanthakumar, Prof. and Head, Department of Kannada, University of Bombay, Bombay.

2. Chandragiri, Varadaraja. *Samakalina Kannada kadamabarigala adhyayana*. Bombay. Dr. T. Vasanthakumar, Prof. and Head, Department of kannada, University of Bombay, Bombay.

3. Girija, S. *Swatantrya purva sannakathegalu*. Bombay, Dr. T. Vasanthakumar, Prof. and Head, Department of kannada, University of Bombay, Bombay.

4. Karnad, Vishwanatha. *Mumbai Kannadigara samajika samskritika adhyayana*. Bombay. Dr. S.K. Havanur, Prof. and head (Retd.), Department of kannada, University of Bombay, Bombay.

5. Mathew, K.M. *Rev. F. Kittel: Ondu adhyayana*. Bombay, Dr. S.K. Havanur, Prof. and Head (Retd.), Department of kannada, University of Bombay, Bombay.

6. Naik, T.V. *Purandaradasa mattu santathukarama taulanika adhyayana*. Bombay. Dr. S.K. Havanur, Prof. and Head (Retd.), Department of Kannada, University of Bombay, Bombay.

7. Rai, Subbanna A. *Dakshina Kannada Jilleya aithihyagalu: Ondu adhyayana*. Bombay. Dr. T. Vasanthakumar, Prof. and Head, Department of Kannada, University of Bombay, Bombay.

8. Ramesh, G.K. *Mogaveera janapada: Ondu adhyayana*. Bombay. Dr. T. Vasanthakumar, Prof. and Head, Department of Kannada, University of Bombay, Bombay.

9. Saraswathi Kumari, K. *Jannana krithigala adhyayana mattu padaprayògakosha*. Bombay. Dr. T. Vasanthakumar, Prof. and Head, Department of Kannada, University of Bombay, Bombay.

10. Shetty, Suneetha. *Karan thara kadambarigala stree pathragalu*. Bombay. Prof. C.K. Dixit, Prof. and Head (Retd.), Department of Kannada, University of Bombay, Bombay.

History

1. Devaliya, Sunita. *Prachin Bharatiya gantantrik vyavastha*. HS Gour. Dr. B.N. Sharma, Department of History, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

2. Diddiqua, Shima. *Khwaja Hasan Nizami: Vyaktitva evam krititva*. Devi Ahilya. Dr. B.K. Punjabi, Prof., Department of History, Govt. Arts and Commerce College, Indore.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

SOCIAL SCIENCES

Library & Information Science

1. Shukla, K. *University libraries in Gujarat*. Vikram. Dr. A.T. Murti, Reader, Department of Library and Information Science, Vikram University, Ujjain.

Psychology

1. Ashok, H.S. *Organisational and interpersonal implications of job stress in prison personnel*. Bangalore. Dr. Indira Jai Prakash, Reader, Department of Psychology, Bangalore University, Jnana Bharathi Campus, Bangalore.

2. Chattopadhyay, Indrani. *A study on the perception of most preferred colour of observers in order to indentify its actual objective measures for counseling colour industry*. Calcutta.

3. Mallick, Nikhilbikash. *An investigation into some behavioural aspects of adolescents*. Calcutta.

4. Mathew, M.K. *A study of managerial effectiveness in relation to organisational climate*. Calicut. Dr. M.A. Farooqi, Department of Psychology, University of Calicut, Calicut.

5. Mohapatra, bhuyan Bhaskar Chandra Samanta Singhar. *Psychosocial perspectives of academic achievement: A comparative study between day and night school students*. Delhi.

6. Pateriya, Krishna. *A study of some personality characteristics of mentally retarded delinquent children.* HS Gour. Prof. Jai Prakash, Head, Department of Psychology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

7. Tangri, Poonam. *A study of social and psychological factors in families with handicapped children.* Panjab.

Sociology

1. De, Rama. *Employment of women in West Bengal since independence with special reference to women doctors: A sociological study.* Calcutta.

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Prospectus and Application form available on payment of Rs. 40/- by Account payee DD/Postal Order drawn in favour of Indian Institute of Finance from Administrative Officer, IIF P.O. Box 8486 Ashok Vihar, Delhi-110 052. Phone: 516839, 7125791, 7234473.
Last date of submitting completed applications: 20 October, 1990 with late fee 30 October.

Professor **J.D. AGARWAL**, *Executive Director*

BANARAS HINDU UNIVERSITY

(Advertisement No. 1/1990-91)

Applications are invited for the undermentioned posts. The benefit of Provident Fund/Pension, Dearness Allowance, House Rent Allowance and City Compensatory Allowance are admissible according to University rules. The retirement age of the University Employees for teaching posts is 60 years and 58 years for non-teaching posts. The appointment will be made on one year probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft/Indian Postal Order/Overseas Postal Order of Rs. 10/- (of Rs. 2.50 for the candidates belonging to Scheduled Castes/Scheduled Tribes category) in favour of the Registrar, B.H.U. towards application fee. Permanent employees of the B.H.U. (including those on probation) are exempted from payment of application fee. **Application form alongwith detailed qualifications will be supplied on receipt of crossed I.P.O./Bank Draft of Rs. 2/- in favour of the Registrar, B.H.U. and self-addressed envelope of 23 cm x 10 cm size carrying stamps of Rs. 2.60.** The University will not defray the travelling or other expenses of candidates called for interview but shall contribute actual Railway fare by shortest route for second class plus reservation charges for sleeper and/or the actual Bus fare from the candidates normal place of residence. Candidates from outside India shall be entitled actual Railway fare by shortest route for second class plus reservation charges for sleeper and/or actual Bus fare from the port of entry to the place of interview.

Application for each post be sent separately alongwith attested copies of certificates and marksheets in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (**Selection Committee Section**), **Banaras Hindu University, Varanasi-221 005, India.**

Incomplete application in any respect will not be entertained. Those who are in service should apply through proper channel. Money Order or Cheque will not be accepted towards application fee.

Reservation: A reservation of 22-1/2% (15% SC and 7-1/2% ST) will be made in the category of non-teaching posts at entry level.

The last date for receipt of application in the Office of the Registrar (Selection Committee Section), Banaras Hindu University either by post or by hand will be **10.11.1990.** Applications will be received by hand at the counter from 10.30 hrs. to 14.30 hrs. on each working day till the last date. No application shall be entertained after the last date from external, in-service employees and the candidates residing abroad.

Note:

1. For Lecturer's post where no specialization is stipulated, the number of vacancies may increase by the time the Selection Committee meets to interview candidates.
2. Those who have already applied for the posts shown at serial numbers 1,2,3,8,14,15,22,29,30,31,35,38,39,45,47,50 to 55 need not apply again. They will be considered according to the qualifications wherever revised. However, they may send 10 copies of their latest bio-data for consideration.

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9. **READER IN MEDICINE (Endrocrinology)** (One)
10. **READER IN SKIN & V.D. & LEPROSY** (One)
11. **READER IN GENERAL SURGERY** (One)
12. **READER IN PAEDIATRIC SURGERY** (Two)
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18. **LECTURER IN SURGERY (Urology)** (One)
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23. **LECTURER IN MEDICINE** (One)
24. **LECTURER IN MEDICINE (Gastro-Enterology)** (One)
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NO. Rect/13/90

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PROFESSORS: 3 posts – one each in Theatre Arts, Fine Arts (Painting) and Communication (Audio Visual) in the scale of pay of Rs. 4500-150-200-7300.

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LECTURERS: 2 posts – one each in Theatre Arts and Fine Arts (Painting) in the scale of Rs. 2200-75-2800-100-4000. (Posts at present temporary but likely to be made permanent).

The prescribed application form and particulars of qualifications, experience etc., for the above posts can be had either in person or by post by sending a self-addressed envelope of size 28cm × 13cm duly affixing postal stamps worth Rs. 3/- superscribing on the top corner of the envelope "Request for applications for faculty positions in S.N. School" from the Asst. Registrar (Recruitment), University of Hyderabad, Central University P.O., Hyderabad-500 134.

In respect of the teaching posts in Performing Arts (Dance and Theatre Arts) candidates who are traditional or professional artists with highly commendable professional achievements in the concerned subject may also apply.

LAST DATE FOR RECEIVING THE FILLED APPLICATION IS **25.10.1990.**

P. Murali Krishna
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UNIVERSITY NEWS, MONDAY, OCTOBER 8, 1990 Regd. No. R.N. 7180/63 Delhi Postal Regd. D(C)1086

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29 OCT 1990
C.F.T.R.I. MYSORE

University News

MONDAY, OCTOBER 15, 1990 Rs. 2.50

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Designing Science Curricula in Autonomous Colleges

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National Centre for Algal Fertilizers

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Code of Practice for U.K. Universities

POSTGRADUATE INSTITUTE OF MEDICAL EDUCATION & RESEARCH
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ADMISSION NOTICE NO. 13/90 (ACAD)

Applications on prescribed form are invited for the following postgraduate/post-doctoral courses etc., for the academic session starting from First January, 1991:

I. FIRST YEAR JUNIOR RESIDENTS (60) FOR MD/MS COURSES IN THE FOLLOWING SUBJECTS:

(a) CLINICAL GROUP: 49 Anaesthesia (5), Dermatology (2), ENT (1), Medicine (12), Obstt. & Gynae (4), Ophthalmology (2), Orth. Surgery (1), Paediatrics (3), Psychiatry (4), Radio-diagnosis (2), Radio-therapy (2), and Surgery (11).

(b) PARA-CLINICAL GROUP: 11 Microbiology (3), Pathology (4), and Pharmacology (4).

(i) Those completing their internship after 31.12.1990 are not eligible.

(ii) In the **clinical** group, candidates can apply for a maximum of two subjects only. There is no such restriction for para-clinical group. Only one application, needs to be submitted. The choice of subjects be mentioned in relevant column of the application. Application fee is Rs. 60/- per subject.

(iii) 22½% of seats in each of the above mentioned groups are reserved for candidates belonging to Scheduled Castes/Tribes. In addition, 5% seats are reserved for candidates who have served or are serving or have carried on private practice in rural areas for a minimum of two years.

(iv) A limited number of sponsored/deputed candidates may also be accepted for the courses mentioned above.

II. Ph.D. PROGRAMME:

Vacancies exist in the following departments:

Biochemistry, Biophysics, Cardiology, Cardiovascular & Thoracic Surgery, Dermatology, Endocrinology, E.N.T., Gastroenterology, Haematology, Immunopathology, Medical Microbiology, Neuro Surgery, Obstt. & Gynaecology, Paediatrics, Pathology, Parasitology, Psychiatry (including Psychology) Pharmacology, Radio-diagnosis and Radio-therapy.

III. M.Sc. Pharmacology.

IV. Diploma course in Immunohaematology and Blood Transfusion.

V. Certificate course in Critical Care Medicine.

VI. M.Sc. Medical Technology (Pathology) with Cytology or Haematology or Immunopathology or Morbid Anatomy as a special subject.

VII. M.Sc. Medical Technology (Microbiology) with Bacteriology or Parasitology or Virology as a special subject.

VIII. M.Sc. Medical Technology (Pharmacology and Physiology).

IX. M.Sc. Medical Technology (Radiology) with Radio-diagnosis or Radio-therapy as a special subject.

X. First Year Junior Residents: 3 for the department of Dentistry for a period of 6 months. One post is reserved for Scheduled Castes/Tribes. Those who have already completed or will complete First Year Junior Residency or House Job for one year by 31st Jan., 1991 are not eligible.

GENERAL INFORMATION

1. For all courses etc., where MBBS or BDS or MD/MS is an eligibility requirement, candidates who have made more than one attempt during their MBBS/BDS course are not eligible. However, those belonging to Scheduled Castes/Tribes with upto two attempts in their MBBS/BDS career will be eligible.
2. Those applying for the reserved seats must append, with their applications, a certificate from the District Magistrate concerned in support of their claim. No other certificate will be entertained.
3. For courses at categories IV to IX above only sponsored/deputed candidates will be considered.
4. Course at category IV is under the Panjab University.
5. The number of seats wherever indicated is provisional and is subject to change without prior notice.
6. The application must be accompanied with non refundable fee of Rs. 60/- in the form of postal order drawn in favour of the Director for each of the courses mentioned above. A candidate applying for more than one subject/course is required to submit separate application, complete in all respects for each subject/course, except for category No. I.
7. Application form and detailed information are available from the office of the undersigned either personally on payment of Rs. 20/- at the counter from 10.30 A.M. to 11.30 A.M. on all working days and from 2.30 P.M. to 3.30 P.M. on all working days (except Saturdays) or by post for which the request must be accompanied with a self-addressed envelope size (23x10 cms) bearing postage stamps of Rs. 4.50 and crossed postal order for Rs. 20/- drawn in favour of the Director.

CLOSING DATE FOR RECEIPT OF APPLICATION IS 6th NOV., 1990.

O.P. Sharda
REGISTRAR

29 OCT 1990

UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

The Application of Case Studies in Teachers' Development

Yoginder Verma*

An effective teacher is one who optimally achieves the teaching objectives set for himself. He tends to utilise his internal and external resources, environment and students' characteristics in such a manner that targetted effects are noticed on students' behaviours. In a teaching situation, variables pertaining to environment and students behaviour are largely uncontrollable. The measure of determining effectiveness are generally qualitative in nature. Moreover, the philosophy of education at higher level is to develop analytical, synthesis and evaluative dimensions of students' behaviour, which is a difficult task. Hence, teaching at this level is very complex and challenging.

A teacher can cope-up the challenges of teaching at higher education more effectively if he possesses certain types of skills, broad and indepth knowledge and dynamic personality. He may be uptodate and well-versed with recent developments in his subject, may have suitable personality but may lack desired skills. Skills do not come automatically. They are to be learnt and refined by repeated practice. When a person utilises his knowledge in certain manner, we happen to call it a skill. We can easily preach about the theory of skills and conclude that an effective teacher should have certain technical, behavioural, leadership, entrepreneurial and conceptual skills but how to acquire these and when to utilise them is a ticklish question. A teacher can develop acumenship to manage a teaching situation by two types of strategies: (a) Learning from theory, and (b) Learning from case studies.

(a) Learning from Theory

Certain skills can be cultivated in a teacher by teaching him well-tested methods and techniques of teaching. These methods and axioms tend to equip him with certain analytical abilities and skills which he can utilise at emerging situations. He also learns about various issues in teaching that call for his attention and perpetual development. But many a time, learned theories become obsolete and stale to meet the requirements of situation. It occurs so because of whirling and rapid changes occurring at different levels. For example, students' expectations, needs and personality patterns are undergoing tremendous changes. The teaching techniques have been revolutionised by modern technology. A teacher has greater stress emanating from the processes of modern society both at home and work place. Society expects him to understand and solve its problems, act as catalytic agent to evolve an egalitarian and secular society and perform leadership role in the process of social change. In such a situation, it becomes difficult for a teacher to emerge as a winner with the help of already learned package of skills which lack specifically contextual validity. Therefore, there is a need for mental-preparedness and knowledge of recent developments at different levels.

(b) Learning from Case Studies

A teacher can learn from different teaching episodes. This will help him to understand, analyse and seek different solutions in varying situations.

** Director, Academic Staff College,*
Himachal Pradesh University, Summerhill, Shimla-171005.

A case is written description of a situation. It covers some or all of its aspects. It puts forth the events and environmental circumstances pertaining to it. A case for teachers' training may include background information, classroom environment, and external environment. There cannot be standardised format for developing a case. But in any case, a good case should place learners in a realistic situation where they can practise teaching skills and abilities. A case may have detailed information and run into a number of pages. On the contrary, a case may have a scanty and little information. This may be appreciated in view of the fact that teachers in the real teaching situations too have information which can hardly be described as sufficient. While we are talking about case studies, we must understand the following aspects of this method.

Objectives

The case study method of training can be implemented to strive for the following objectives:

1. Improvement, sharpening and refining the teaching skills by operationalising the theories.

2. Development of problem-solving attitude through the reinforcement of a systematic process of diagnosing problems, analysing and evaluating alternatives and formulating workable plans of teaching.

3. Equipping the learners to seek their own solutions rather than relying on textbook formulæ or guidance.

4. Providing an exposure to the teachers about a wide range of teaching situations, which otherwise may not be experienced or learned even during whole teaching career of a teacher.

5. Helping the learners to apply their skills in varied eaching situations and test their validity and reliability.

Case method of developing skills rests on the rinciple of 'Learning by doing'. Reading materials and ectures alone cannot contribute to effective learning. n many teaching situations at higher education level, rogrammed instruction may not be implemented. It is ecause every situation is different and requires its own iagnosis and evaluation before any action can be nitiated. Cases are laboratory materials and offer easonable substitutes for actual experience.

enefits

The following are the main benefits of applying case ethod approach in training and development of achers at higher education level:

The participants will develop an insight to nderstand ambiguous situations where no right lutions exist.

It will assist the learners to evolve creative plans and chniques.

The participants will learn to utilise various teaching ethods and aids in varying situations.

While discussing in a group setting, the skills to hieve inter-personal effectiveness will improve.

The participants learn how to communicate in a stressful situation.

6. Case studies cultivate habits in the teachers to successfully meet the problems with the information at hand.

7. The learners learn how to write an effective report.

8. In teaching profession, values and judgements play a vital role. Hence, the case studies help teachers to rationally review their own subjective self-image and value judgements.

The case method will also enable a teacher to develop an attitude of seeking solutions from the group interactions. He will become more sensitive to students' views, ideas and problems. The ultimate beneficiary of such interactions will be the students.

Analysing the Case

The case is distributed in advance to each participant who is required to write a report of the analysis and solution he has arrived at. This report is presented before the group and discussed in a group setting. The facilitator moderates the discussion around certain issues and questions identified in the case or by the group. Ordinarily, one will analyse the case by taking the following steps:

1. Analysis of environment, both internal and external.

2. Enumeration of facts which emerge from the case.

3. Identify the issues which need to be solved.

4. Appraise and evaluate the environment.

5. Seek solutions with the help of logical and analytical tools.

Developing a Case

The case analysis focusses at identifying, diagnosing and recommending. It does not necessarily strive for 'right answer'. The focus of case studies is to become skilled in the process of designing workable solutions through evaluation of prevailing situation. Therefore, a case should be develooped out of the realistic situations. It may contain plenty of information running into several pages or may be a paragraph. The basic premise is that it must provide issues, facts, and environmental cues. The following precautions should be observed while developing a case:

1. It should be comprehensive and well documented.

2. It should be a faithful and objective presentation of facts and issues.

3. The case developer or reporter should not advance any comments.

4. The case should be written in simple language and interesting manner.

To conclude, the case method is one of best methods of modifying the participants' behaviour. It develops analytical, conceptual and behavioural skills. The case developer has a greater responsibility of dramatising the realistic situation in order to provide opportunities to the analysts for applying theoretical knowledge and experienced solutions. □

Designing Science Curricula in Autonomous Colleges

R. Gopalan*

The quality of human life in a country depends on the quality of science teaching in the schools and colleges in that country. Considering this, science curricula have to be drafted with great care.

Scope

The scope in science curriculum should be defined after carefully considering the breadth of objectives to be emphasised in science. The scope should emphasise mastery learning. The science faculty should discuss and determine the scope of curriculum carefully prior to teaching. After teaching, there should be available means to examine whether the scope and objectives as envisaged have been achieved. If these are not achieved in spite of a good curriculum, then teaching strategy has to be revised.

The curriculum should be graded in such a way that there is a natural ascendancy in the achievement of knowledge, skill and methodology by the students during the academic year.

Quality

The quality in science curriculum can be evaluated not only by assessing the performance of students through a rigorous examination system, but also through his acceptance by the employers. How successfully a quality curriculum is taught depends on the teacher. If the teacher is not capable of making the students understand and appreciate the scientific concepts, then a good curriculum would simply remain an ornamental document.

Relevance

The term relevance with reference to curriculum is the most widely discussed aspect in our educational system. A relevant curriculum should serve the expectations of the society. It should, in addition, make the graduates employable. Science curriculum should largely emphasise what is significant and needed in society. Every society has innumerable problems. Principles of science underlie solutions in solving such problems. Therefore, a relevant curriculum is one, which when applied should be capable of solving the problems of the society. At the same time, relevance should not be extrapolated to short-term material gains. It should be tempered with moral principles. Science without morality would be like a flower without fragrance.

Modernity

Incorporating modernity in science curriculum is a tricky aspect. Basically, this implies introducing the most recent developments of science in the curriculum. However, every modern aspect of science is founded on the bedrock of old, time-tested scientific principles. Therefore, no science curriculum can totally be a modern one. However, modern aspects should be integrated in the science curriculum in a logical sequence. All the modern aspects of science may not always stand the test of time; therefore, blind acceptance of a principle is not desirable, simply because it is modern. Sometimes, curriculum designers unwittingly succumb to the temptation of drafting the most modern curriculum, which would not impart the basic scientific knowledge and skill required in science graduates.

Curriculum as a Tool for Progress

A curriculum is a method of disseminating knowledge in a systematic and progressive manner. This is achieved by a sequence of learning by the students and guidance by the teachers. Learning becomes easy for the student when the curriculum is to his aptitude or liking and when it assures that it would be useful in his life. A dynamic curriculum should induce changes in the students. Therefore, curriculum developers should construct meaningful, relevant and exciting curricular materials that properly accentuate the state of discipline, its utility and value.

Whenever curriculum reforms are effected, these should be done so as to provide increased inter-disciplinary approaches in training, flexibility in course options based on the students' interest and also serve the national aspirations for social change. What is the use of our curricula if they are ineffective in solving our social-ills?

The curriculum by itself is not the be-all and end-all of college education.. It is only an instrument for academic reformation. How this instrument is used effectively depends on the teacher. An excellent curriculum in the hands of a professionally uncommitted teacher is like choice and food ingredients in the hands of an incompetent chef.

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**Prof. and Head, Department of Chemistry,*
Madras Christian College, Tambaram,
Madras- 600 059.

MODERN OLYMPIC MOVEMENT

Baljit S. Grewal*

Professor Pierre de Coubertin, the French founder of the modern Olympic movement in 1892 AD, after a gap of 1120 years, observed "Olympicism is the humanist view of life which may be defined as the quest through sports, practised intensively and always, with a sense of fairplay, for a harmonious development of the mind and body, ennobled by civic, cultural and spiritual aspiration which the Olympic games and athletes themselves strive to exemplify".

Coubertin had dreamt Sports as a part of education, cultural and the physical well being of the youth. He perceived sports as a vehicle to ennoble and elevate the spirit of humanism. Civilization is built up with brick and mortar, steel & machinery, but culture with men & women, with clarity of thought, chastity of heart and a spirit of cooperation. A vision of harmony is an act of moral perfection which enables an individual to see himself in his neighbour.

Sports call for self-restraint, composure and observation. It has much to do with psychology as with physiology and influence understanding, character and conscience. It is, therefore, an agent of social and moral improvement-coubertin.

"During ancient times the warring Greek city states suspended their belligerence, for the duration of the games, so that contenders could meet at Olympia in an atmosphere not charged with political acrimony. Perhaps the idealist who at the end of the last century, spoke so loftily of resurrecting "the olympic ideal" had the same thing in mind. If so, the idea has not borne fruit. No Olympic games were held during the first world war and second world war, although they fell due in 1916, 1940 & 1944". Nevertheless, their number is counted for the sake of continuation.

"In reality, far from the sport being an expression of youth or in any way embodying the olympic ideal, few fields of human activity have been so politicised. Now-a-days, no cabinet is complete without its Minister for Sports, showing how little value western democracy places in its own cliches. The Soviet Union's retaliatory boycott of the 23rd Olympiad in Los Angeles-1984 games, like the U.S.A.'s of the games in Moscow-1980 (avowedly in protest at the occupation of Afghanistan) make non-sense of the olympic ideal. Sports, as a means of achieving spectacular triumph for minimum outlay in a way not possible with science or industry, accounts for the gold-medal factories of Eastern Europe. According to one view point the Munich Games-1972 were held to undo the image of the (highly successful) Berlin Games of 1936, and were designed primarily as an orgy of celebration by the post-war plutocracies, a celebration the Palestinians rudely chose to interrupt in order to make their statement regarding injustices in the world that these powers prefer to ignore".

Sports is psychologically the closest thing to warfare, indeed often a vicarious substitute. Nevertheless, the Torch of Peace is more valuable than those medals more precious than victory.

Somehow, the headed amateur code is being eroded and depleted into shamateurism. Mr. Avery Brundage—a Chicago multimillionaire and himself a Olympic gold-medalist, as a former President of the International Olympic Committee for more than two decades, held the fort, in favour of Amateurism, which has been yielded to professionalism openly under the global pressure of inflation and unemployment.

Olympic is now being turned by the present International Olympic Committee into a jingle of coins and broadening its base under the current crushing economic waves to steer it across to the shores of survival. Nevertheless, the splash of emotion is likely to be more disastrous. The simmering has started. Anti-Olympic voices are on the fore. According to Tokyo Communication dated 12th Sept., 1990, "the International Olympic Committee (I.O.C.) President Juan Antonio Samaranch earned the wrath of Japanese and Canadian anti-Olympic Crusaders here yesterday when he spoke for growing commercialism in sports", report agencies.

A group of four Japanese demonstrators chanted "No Olympics to Nagano—the Japanese city bidding for the 1998 winter games. The feared environmental destruction and speculative sports-linked development inspired by the Olympics. This irritation is highly infectious to engulf the whole globe before long.

Two members of "Bread not ciruses"–Toronto's anti-Olympic coalition, handed out leaflets and paraded banners protesting the Canadian city's bid for the 1996 summer Olympics.

I.O.C. will have to put up a very vigorous hunt against drug abuse all the more when the triumph is to be cashed. The introduction of uncontrolled commercialism will make us all to face its costly music.

The mounting cost of holding Olympiad is a matter

**Former Chief Sports Organiser, Punjabi University, "Til", 244-A, Sarabha Nagar, Ludhiana-141 001.*

of grave concern. According to a recent unofficial estimate, the six cities of Athens, Atlanta, Belgrade, Melbourn, Manchester and Toranto have spent a total of $100 million on their bids for conducting 1996 centenary Olympics. This has made I.O.C. to consider to curb this excessive promotional spending. Normally, gambling is a serious punishable offence in China and is considered one of six evils alongwith prostitution pornography, superstition, drugs and trafficking in human beings, but in the Asiad spirit, some lottery and controlled betting is encouraged.

Let us plan to take the sacred Olympic flame to cope of Good Hope (Africa) and Brazilia (Latin America) on the turn of the century, so as to make Olympic movement of presently 88 Nations, as geographically global. Significantly, the central ring of the Olympic insignia is Black in colour and the dark continent continues to be side-tracked. To reduce excessive cost of conducting Olympic games, we can conveniently allocate various games to the five cities rather than concentrate these in one station as has been done in the past. Atlanta has carried the day being the world H.Q. of Coca-Cola also.

The author has been making thoughtfully humble contributions ever since his eastern expression of the Olympic Philosophy was first published by Mexico-1968. The latest sports saying for XI Asiad Beijing-1990 reads as follows:

"Play to be happy and gay."

Previous Nine sports saying are:

1. Life is a cycle, cycle it as Hero.
2. Fearless feathered feet flee farther in the firmament.
3. The flame, the pigeons, the oath are the sparkling symbols of sports to perpetuate its soulful message of peace and progress.
4. Let us enrich life with ethics, athletics and aesthetics.
5. War and peace are, as you take them.
   Steel and sports are, as you shape them.
6. Sports strength our bodies, socialize our habits, smarten our intellects, silken our minds and sublimate our lives by providing a symphony of smile, success and salvation.
7. We need a saint and a scientist to shape a sportsman.
8. The ultimate goal of a sportsman is to conquer the self.
9. To distil human strength into speed and skill and to elevate mankinds' mind above the weakness of reward and recognition is the sole purpose of sports.

Designing Science Curricula in Autonomous Colleges

(Contd. from page 3)

Designing Curriculum: Teachers' Privilege

Freedom to devise his own curriculum is an important privilege which a teacher has in an autonomous college. Using this privilege properly in a responsible way to benefit the students and the society depends on the teacher himself. Therefore, how the teacher exercises this privilege is crucial to the successful application of the concept of autonomy. Successful change in education depends on the active cooperation of talented and committed teachers.

Practical Curriculum

Conducting laboratory exercises is the best way of learning by a science student. Therefore, the curriculum for the practical classes has to be designed with great care. Loading the curriculum with theoretical aspects limiting the time for laboratory exercises would sap student's enthusiasm for learning. The practical curriculum for the science courses have to be formulated keeping this fact in mind.

Thrusts Needed in Science Curriculum

Science curriculum offered in autonomous colleges should emphasise the following:

1. acquisition of scientific concepts clearly by the students;
2. imparting problem-solving ability;
3. developing instrumental skills;
4. improving communication and writing of scientific facts;
5. promoting enthusiasm for reading science literature; and
6. developing scientific temper and conscientise students for appreciating ethical, moral and aesthetic values in applying science in society; develop sensitivity to possible misuses of science.

Deficiencies

1. The students are 'mark-minded' and always obsessed with the preparation for the tests and examinations especially in autonomous colleges. This tendency has weakened the real spirit of learning science in our colleges.
2. Even with the receipt of grants from the University Grants Commission (UGC), the science laboratories are under-equipped. The galloping cost of conducting practicals has eroded to considerable extent, the quality and quantity of laboratory exercises. Therefore, the UGC grants have to be enhanced.
3. It should be admitted that no systematic method has been adopted to evaluate all the professed objectives of our science curricula. Superficially, the system seems to be ticking. The complacence based on this is likely to wreck the validity of autonomy. Therefore, a system of check, ciritical analysis and constant revision of the curricula should be built in the academic planning in autonomous colleges to render autonomy credible and sustaining.

Convocation

Combating Obsolescence

Prof. S.K. Khanna, Vice Chairman, University Grants Commission, delivered the Convocation Address at the Second Convocation of the Avinashilingam Institute for Home Science and Higher Education for Women. He said, "On one hand, we have severe constraints on funds and on the other hand, the institutions of higher education are exposed to a threat of becoming obsolete. Unless the laboratories and libraries are improved and updated and innovative educational technology adopted, the institutions will fast become obsolete. It is equally necessary to keep the faculty updated and exposed to the latest in knowledge and in teaching, by giving them training and retraining." He further added, "The university manpower compared to many other sectors need to keep their minds sharp and receptive so as to continuously interact with younger minds and scholars." Excerpts

Today, I would like to share with you some of my thoughts on certain issues which, I think, are of crucial importance in present days' context which call for a deeper involvement and the manner in which we need to proceed, keeping in view the various facets of a developing society. When I say facets, I mean, to think and develop a balanced approach for our growth under demanding situations. These include explosion of knowledge, innovation in educational technology, taking advantage of developments in communication system, teaching of frontier areas in science and technology, a large student population, inadequate infrastructure and institutional facilities. Other issues are relevance of our education, financial resources required for meeting challenges of education particularly higher education. These issues individually and collectively pose serious challenges to our present status and future growth. Even if, one ignores for a moment the qualitative needs, mere input required for meeting the present needs by sheer number and quality would be frightening.

We notice an ever expanding gap between demand and supply in the higher education sector. There is a growth rate of about 4% per annum in the student-enrolment and in number of institutions. These coupled with serious escalation in the cost of infrastructure facilities cause a serious drag on development efforts. A recent review carried out on the UGC funding of the universities and the colleges, points out that on an average during 7th Plan period hardly Rs. 235 lakhs to each university and Rs. 3.5 lakhs to each college have been provided. In respect of the university, this amount works out to a mere 4% of its annual expenditure and still lower in respect of colleges.

On one hand, we have severe constraints on funds and on the other hand, the institutions of higher education are exposed to a threat of becoming obsolete. Unless the laboratories and libraries are improved and updated and innovative educational technology adopted, the institutions will fast become obsolete. It is equally necessary to keep the faculty updated and exposed to the latest in knowledge and in teaching, by giving them training and retraining. The university manpower compared to many other sectors need to keep their minds sharp and receptive so as to continuously interact with younger minds and sholars. Adherence to a precise annual calender is also important because each student which enters the university should complete its academic programmes at designated times and not later. Therefore, the university community need to be always having active and receptive mind to keep young minds always excited, thrilled and tuned to the process of learning. To keep these factors at the optimum level is a real challenge to any university today. If all timely measures are not taken, many universities may become obsolete.

One also comes across a criticism that all that is taught is not relevant from the point of view of employment. I do not believe that acquiring wisdom or for that matter any learning is irrelevant. It may appear that some knowledge has direct application, but to apply it fairly and judiciously to the welfare of mankind, some more wisdom is needed. One may call it the foundations. I therefore believe that no knowledge is wasteful. However due to compelling demands for accelerated economic growth, it is necessary that we focus more to knowledge and skill that can be put to practice which may help skip over vast gaps in the economic growth. But it is certainly not the real purpose of Education.

We have witnessed in our country considerable economic growth in the last four decades by incorporating appropriate strategies and technologies. We have also been able to put to application some science and technologies which have been developed by ourselves. Our first priority is the basic needs of the population which included food, housing, health, employment and education alongwith associated service sectors such as energy, transport and communication. For the second priority, one may think in terms of developing materials technology, because it has important role of the communication system and through it the nation building. So, the priority areas include providing food and shelter for all. Then our priority is on machines and computers. We are struggling to have a balance between primary social goals and promoting competitive industrial sector. Pt. Jawaharlal Nehru enunciated the concept by assigning a pivotal role of science and technology when he stated in Scientific Policy Resolution of 1958 that:

> "The key to national prosperity, apart from the spirit of the people, lies, in the modern age; in the effective combination of three factors: technology, raw materials and capital, of which the first is perhaps the most important, since the creation and adoption of new scientific techniques can, in fact, make up for a deficiency in natural resources, and reduce the demands on capital".

Our future scenario should necessarily include strategies for deceleration of population growth, increased food production with aid of bio-technology, complete literacy, health and shelter for all, efficient management of energy and transport system, reversal of erosion of ecology. All this would help our masses to come out of poverty and generate employment for people. All this may sound fascinating, but it carries the underlying message that each one of us in the society would need to contribute skill and labour sincerely into whatever sector we all belong. One knows that sincerity of purpose, not only in thought but in action can always result into splendid success. Nothing is more important than putting one's body and mind in action and not merely in thoughts.

We know that for economic growth, and development, we would simultaneously need appropriate technology which should be effective, efficient and low cost. The higher education sector has to shoulder a great responsibility here. Aspects of education, health and control on population growth have direct bearing on the well being of the society. We have been constantly thinking so far to eradicate illiteracy; but one cannot be proud of the level of success. It seems that rapidly increasing population, possibly, the number of illiterates in the society either are going up or in some regions the number almost remain constant. We know that 49% of our people are below poverty line and about 40% of the world's illiterate population is in India. We also know that 70% of our women are illiterate, 45% of our people do not have safe drinking water and 90% of the population is without sanitation facilities. We cannot ignore these issues when we discuss about the national development. If the fruits of national development cannot reach the masses, there is surely a serious case of mis-match and mis-management. Necessarily, in our task of planning for the next century, a definite and a permanent strategy will have to be accepted to arrest our problem of illiteracy in definite and exact terms within a time schedule. If in the agricultural and industrial sectors, physical targets are defined and are achieved, then why targets cannot be defined and achieved for removal of illiteracy? If epidemics and wars can frighten the human society, why illiteracy does not? Reason is a state of complacency when it comes to illiteracy. Literacy mission does not yield direct economic gains to individuals as are obtained from agriculture or industry. But the result of achieving complete literacy is a better society, a better world to live. Problems of health and hygiene have a strong bearing on the size of the society. Hygienic conditions could be improved, if we can succeed in arresting the population growth. Can any gain be rated higher than this? One should not merely be a spectator but has to get involved in the task.

Depleting environment by human activities is another threat to us world over. This threat assumes serious proportions especially in under-developed countries because of receiving wastes of damaging activities in other countries especially from the developed. Encouraging import of wood carvings, animal skins and ivory, dyes and intermediate chemicals and many other natural and man-made products by the developed countries is creating an imbalance in ecology. We know, these imbalances would ruin the human inhabitation on earth beyond redemption. If we equally divide food, land, drinking water, electricity and energy and other facilities to the world's population, we may obtain per capita unit that is by and large sufficient for survival of all. Inadequacy and insufficiency do not exist but are man made. It would be a great task achieved by our institutions of education if they can educate our people to this cause particularly to accept and appreciate our mutual concern.

We know that education is the only tool which is universal and still unpolluted. Education is the only hope which can bring a new world order. When we think of education to build a future society, we would think of education to give us a better living and togetherness in a society where there is concern for all.

Our scientific pursuits would need to develop mechanism to produce enough goods and facilities for our well being. Technology should be employed to this cause. With this purpose in view, the education programmes should be made flexible to absorb the technological gains for imparting skill and training. Manpower should be retained to meet challenges arising out of innovations in science and technology. Our institutions of higher education therefore, have great responsibility to be alert and alive for such adaptations. We would need flexibility in our courses and curricula to provide this kind of training and retraining.

My thoughts also come to another important aspect relating to women's education. Your institution has played a very important role in this regard. There are hardly three institutions of higher learning exclusively devoted to Women's education in India. I see a very great potential in these institutions for developing education programmes which are and can be linked with vocations specially suited for women like textile designing, electronics, food technology entrepreneurship and management etc. Many of these programmes are already available at this institution and many more diversified areas, I am sure, will be ventured into. I see a bright future for the Avinashilingam Institute for Home Science and Higher Education for Women. ☐

Information Service to Researchers in Universities

The National Centre for Science Information (NCSI) offers upto date, computerised information services to the faculty members and researchers in Indian Universities and Colleges *free of charge*. Operating since 1984 from the Indian Institute of Science, Bangalore, the Centre has been set up by UGC. Its staff consists of computer scientists, information scientists and support personnel. Besides its own minicomputer facility, the Centre has access to the IISc DEC 1090 mainframe computer system. NCSI has arrangements with the world's leading abstracting services to regularly receive their database updates on magnetic tapes.

A researcher enrolled for this service will regularly receive abstracts of recently published literature pertaining to his area of research. This includes journal papers, conference proceedings, books, patents, technical reports, meetings, reviews, etc. Besides the abstract, each computer printout contains details of author, title, source, reference, author address, etc.

The areas covered by the service are:

Physics: All areas of Physics, Electrical & Electronics Engg., Computers and Control and Information Technology—From INSPEC-I (IEE, UK) Database covering 'Physics Abstracts', 'Electric & Electronics Abstracts' & 'Computer & Control Abstracts'; **Chemistry:** Biochemistry, Organic Chemistry, Macromolecular Chemistry, Applied Chemistry, Chemical & Physical Engg., Inorganic and Analytical Chemistry—From CA-Search (Chemical Abstracts Service, USA) database covering 'Chemical Abstracts'; **Mathematics:** Statistics, Numerical Analysis, Fluid Mechanics and related fields like Relativity, Astronomy, Astrophysics, etc.—From MATHSCI (American Mathematical Society, USA) database covering 'American Mathematical Reviews'; **Life Sciences:** General Biology, Basic Medical Sciences, Micro-biology, Immunology, Public Health and Parasitology, Plantology, Sciences and Animal Sciences—From BIOSIS (Bioscience Information Service, USA) database covering 'Biological' Abstracts'; **Geology:** All aspects of Geology, Minerology and Crystallography, Hydrology and Geophysics—From GeoRef (American Geological Institute, USA) database covering 'Bibliography & Index to Geology'.

Software has been developed at NCSI to scan the database update tapes on a computer and to select abstracts that match the "User Profile". The profile of an user is constructed using keywords supplied by him/her at the time of enrollment. Through regular user feedbacks, these profiles are periodically updated to precisely match the user interests.

Currently the Centre has on its mailing list more than 2,000 scientists working in Universities and Institutions of higher learning all over the country and engaged in research in different areas of science.

If you are a researcher in any University or College, and wish to become a user of this *free service*, you may make your request for a 'Profile Information Sheet' to: Prof. V. Rajaraman, Chairman, National Centre for Science Information, Indian Institute of Science, Bangalore 560 012.

Non-Teaching Staff Training Centre

There is need to expose the administrative functionaries to the basic skills communication, team-building, problem solving, time-management and sub-ordinate development, for better management of university administration, said Prof. G.J.V. Jagannadha Raju, Chairman of A.P. State Council of Higher Education, while inaugurating the Training Centre for Non-Teaching Staff of Universities in India at Kakatiya University recently.

Prof. Raju said that the university authorities generally attributed their problems to inadequate financial resources, but they often neglected the associated problems of ineffective resources, planning and inefficient utilisation of the human, physical and financial resources at their disposal. He further said that no amount of training would be of any use unless the officers of various cadres like the Deputy Registrars and the Assistant Registrars learned the latest techniques of university administration. They should be aware of the various provisions of the Acts of the University Grants Commission and other funding agencies like the Department of Science & Technology (DST), the Council of Scientific and Industrial Research (CSIR), etc. The needed training should be periodically organised for different functionaries in the administrative hierarchy to manage the ever-growing and complex university system in the country.

The University Grants Commission has sanctioned the Training Centre to Kakatiya University for three years for organising two or three courses in a year for the non-teaching staff on various aspects of university administration.

In his presidential address, Prof. Jafar Nizam, Vice-Chancellor of Kakatiya University said that they would strive to make the best use of the Training Centre for imparting effective training to the non-teaching staff in various aspects of university administration. He said that several universities in the country were facing the crisis of 'skill erosion' of human resources, both teaching and non-teaching. This created the need for universities to expose and orient their human resources to the latest methods and developments in the management of universities to achieve skill development. The Academic Staff Colleges established by the UGC were struggling to fill this gap in respect of the teaching staff and the Training Centres of this type (one at Chandigarh and the other at Kakatiya) would take care of a similar need in respect of the non-teaching staff.

Dr. K. Rajeshwar Rao, Co-ordinator of the Training Centre, in his report detailed the aims and objectives of the training programme and said that 22 topics had been identified for the present course on University Administration. University would organise another course on 'Management of University Academic Affairs' in the second phase, he said.

25 Non-teaching staff members drawn from 15 universities in the country attended the 2-week course on university administration.

National Centre for Algal Fertilizers

A Rs. 4.78 crore national centre for technology development and demonstration on algal fertilizers has been set up at the Madurai-Kamaraj University campus. According to Dr. G.S. Venkataraman, Director of the Centre, "It is a pioneering institute with an extensive network of centres to cover the length and breadth of the country, and it is sponsored by the department of biotechnology, New Delhi."

It is going to be a unique facility in the whole of Asia in terms of infrastructure and research methodology. One of the foremost objectives of the centre is to establish 'algal biofertilizer parks' in the six centres of Madurai, Coimbatore, Pune, New Delhi, Lucknow, and Calcutta, and propagate the production technologies of biofertilizers, for use in rice fields. The main centre at the Madurai-Kamaraj University will focus attention on the basic aspects of development of new strains of blue green algae (BGA) using modern biotechnological tools. We hope to establish at least 100 such algae parks in the country eventually. The centre at Coimbatore will concentrate on azolla biofertilizer," explained Dr. Venkataraman.

The centre will actively involve the regional agricultural universities and the State departments of agriculture in all its research and extension activities. A global germplasm collection will be maintained at the Madurai centre. Research on salt-tolerant species of BGA, and herbicide-resistant species, and important pests and diseases of the biofertilizers will be taken up.

IDRC Project on Nutrition in Urban Slums

The Department of Postgraduate Studies and Research in Home Science, SNDT Women's University has been given a grant by the International Development Research Centre (IDRC) for the project on "Nutrition in urban slums" to improve the health and nutritional status of urban slum families by enhancing access to nutrition and health services and improving utilisation through active community participation.

The objectives of the project are: (a) to evaluate the existing nutrition and health infrastructure and its utilisation for provision of services; (b) to assess needs and perceptions of slum families for nutritional and health improvement; and (c) to plan and implement intervention programme to improve access to food, health and non-formal education including skill training, by mobilising community and local resources.

The Department will collaborate with the Institute of Home Economics, New Delhi, the All India Institute of Public Health & Hygiene and the Child in Need Institute in Calcutta on this project.

The Departments of Food Science & Nutrition & Family Resource Management are upgraded to the DSA status for the major research thrusts in Maternal and Child Nutrition and Ergonomics in the Home. The Departments have several publications in these research thrust areas.

The Postgraduate sections of the departments of Child Development (now changed nomenclature to Human Development) and Foods & Nutrition (now changed to Food Science & Nutrition) commemmorated their Silver Jubilee Year (1989-90) with seminars, exhibitions, research and extension activities.

News from Agril. Varsities

Biotechnological Approaches to Upgradation of Crops

A three-day National Seminar on Bio-technological Approaches for upgradation of Agricultural and Horticultural Crops was recently held at Tamil Nadu Agricultural University (TNAU). Presiding over the seminar, Dr. S. Jayaraj, Vice-Chancellor, TNAU, advocated village based small scale sectors for mass producing the biotechnological products on commercial scale. He called upon the unemployed farm graduates to take up the entrepreneurial venture of producing the biological control agents for field use in Integrated Pest Management.

"Industries and research organisations should coordinate and interact for gaining desired results", he said and called for matching industrial programmes to accrue the benefits of the biotechnology research. In order to meet the long term manpower requirements, young scientists will be trained, he added.

The conventional method of breeding for evolution of varieties resistant to pests and diseases is cumbersome and time consuming. In such cases, use of genetic engineering and molecular biological approaches in developing high yielding crop variety with resistance to pests and diseases would be ideal. The postman's crops should be given due importance.

Dr. S. Jayaraj added that the cells of plants could be cultured under defined conditions and whole plants can be regenerated from cultured cells.

The Vice-Chancellor envisaged that Biotechnology had immense potential in increasing agricultural and horticultural production by way of minimising yield losses due to pests and diseases. The technologies, he said, were environmentally sound and could be harmoniously integrated with other methods of pest management. In a country like ours, the resource-crunch farmers should be helped by making available the fruits of biotechnology research in a relatively short period.

Dr. S.R. Sree Rangaswamy, Director, School of Genetics, in his introductory remarks emphasised that concerted efforts were needed in biotechnology approaches to fully realise the potentialities in agricultural and horticultural crops.

Dr. Joseph Thomas, Chief Executive, SPIC Science Foundation, Madras, who inaugurated the seminar, complimented TNAU Scientists for the intellectual input in persuing commercial tissue culture. Highlighting the biotechnology scene in our country, he emphasised that the recombinant DNA research be strengthened.

85 delegates from research institutes, agricultural universities, private industries and sister organisations participated.

Sand Dredging Machine

Kerala Agricultural University has developed a labour saving sand dredging machine under a research project funded by the Council for Advancement of Peoples' Action and Rural Technology (CAPART) under the leadership of Prof. K. John Thomas, Professor & Head of Irrigation and Drainage Engineering.

While two men can dredge only 10 tonnes of sand a day (1.2 tonne per hour), the dredger can remove about 120 tonnes of sand a day (15 tonnes an hour).

The equipment consists of a low cost high velocity ejector system. This when used with high pressure centrifugal pump utilises the discharge of the said pump to suck an additional quantity of water through the device. The water thus sucked into the ejector is several times the discharge capacity of the centrifugal pump. When the mouth of the ejector is brought near the river bed the suction draws in the sand in a fluidised mass. The high velocity fluidised mass is fed into a hydrocyclone which separates the sand and water.

The significant feature of this machine is that it does not allow the sand to be drawn into the pump. The pump and the ejector is mounted on a specially designed floating platform using polyethylene drums as pontoon. The total cost of the machine comes to Rs. 26,500/-

News from UGC

Countrywide Classroom Programme

Between 16th October to 23rd October, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

16.10.90

"Organic Techniques – I"

"Media in Formal and Non-Formal Education"

"Laser"

17.10.90

"Eye & Light Pollution"

"The Glory that was Baijnath"

"A World Apart a World of Caves"

18.10.90

No Telecast

19.10.90

"The Energy of Moon Turbine"

"Photo Journalism"

"Global Warming"

20.10.90

"Rasa Ranjita – Understanding Indian Dance – 4: Bharatnatyam – I"

"Careers in Advertising"

"Fire Fighters"

21.10.90

No Telecast

22.10.90

"Classical Mechanics – 4: Newton's Second Law"

"In Conversation with Sir John Harvey Jones"

"The Pond"

23.10.90

"Organic Techniques – II"

"Methods of Physical Rehabilitation"

2nd Transmission
4.00 p.m. to 5.00 p.m.

16.10.90

"The Halogens"

"Non Invasive Diagnosis – I: Update on Nuclear Imaging"

17.10.90

"Electromagnetic Interference"

"Music in Marble – I: A Programme on Delwara"

"Plant Fossils – V: The Moving Biospheres of the Moving Continents"

18.10.90

No Telecast

19.10.90

"Origin of Geometry"

"An Experience of a Greek Indian"

"Endangered Mammalsin India"

20.10.90

"Rabindra Sangeet – I"

"Western Theatre"

21.10.90

No Telecast

22.10.90

"Comets"

"Management – XI: Planning"

"Earthworms – I"

23.10.90

"Preparation of Aluminium Chloride"

"Introduction to Visual Aids"

"Iron Armour with a Spoon of Salt"

Emeritus Fellowships for 27 Scholars

The University Grants Commission has awarded Emeritus Fellowships to the following 27 scholars: Dr. A.R. Mehta, M.S. University of Baroda, Baroda (Botany), Dr. P. Shanmugam, Bharathiar University, Coimbatore, (Chemistry), Prof. M.N. Desai, Gujarat University, Ahmedabad (Chemistry), Dr. P.C.

Chandrasekaran, Anna University, Madras (Computer Science & Engg.), Prof. R.K. Varshney, Punjab Agricultural University, Ludhiana (Elect. Engg.), Prof. Rajender Prakash, University of Roorkee, Roorkee (Mech. Engg.), Prof. B.V. Ranganathan, Indian Institute of Science, Bangalore (Civil Engg.), Prof. C. Naganna, Bangalore University, Bangalore (Geology), Prof. Vikaramaditya Singh, Punjabi University, Patiala (Maths), Prof. Jagdish Verma, M.L. Sukhadia University, Udaipur (Physics), Prof. K.D. Krori, Cotton College, Guwahati (Physics), Dr. V.B. Bhanot, Panjab University, Chandigarh (Physics), Prof. R.P. Dwivedi, Banaras Hindu University, Varanasi (Sanskrit), Prof. Akbar Hydiri, University of Hyderabad, Hyderabad (Urdu), Dr. Y.M. Pathan, Marathwada University, Aurangabad (Marathi), Dr. M. Leelavathy, Cochin University of Science & Technology, Cochin (Malayalam), Prof. A. Rajeshwarsarma, Osmania University, Hyderabad (Telugu), Prof. (Mrs.) Ila Rao, Andhra University, Waltair (English), Prof. A.N. Dhar, University of Kashmir, Srinagar (English), Prof. Laxmi Narain, Osmania University, Hyderabad (Commerce), Prof. P.R. Nayar, University of Mysore, Mysore (Education), Prof. Charanjit Singh, Himachal Pradesh University, Shimla (Physical Education), Prof. S.K. Verma, Central Institute of English and Foreign Languages, Hyderabad (Linguistics), Prof. R.R. Ramchandani, University of Bombay, Bombay (Pol. Science), Prof. Sachchidananda, L.N. Mithila University, Darbhanga (Sociology), Prof. S.L. Pandey, Allahabad University, Allahabad (Philosophy), and Dr. D.M. Nanjundappa, Bangalore University, Bangalore (Economics).

The Emeritus Fellowship Scheme is intended to utilise the services of superannuated highly qualified and experienced university professors, who have been actively engaged in research and teaching in the preceding years, to enable them to pursue further research in their field of specialisation and also to help the UGC in monitoring of educational programmes initiated by the Commission. Besides superannuation benefits, the Fellowship carries an honorarium of Rs. 4,000/- p.m. (fixed) and an annual contingent grant of Rs. 10,000/-. The Fellowship is tenable for a period of two years or the age of 65 years whichever is earlier.

News from Abroad

Code of Practice for U.K. Universities

The committee of Vice-Chancellors and Principals of UK (CVCP) has drawn up guidelines to formulate code of practice for universities. It urges each university to formulate policy statements on racial and sexual harassment.

If draft guidelines drawn up by vice chancellors are approved, pressure will be put on universities to dismiss staff and students who are found guilty of racial or sexual harassment.

Racial harassment includes "derogatory name-calling, insults and racist jokes, racist graffiti, verbal abuse and threats, physical attack and ridicule of an individual for cultural differences".

Sexual harassment, says the document, involves "unwanted sexual attention which emphasises sexual status over status as an individual, colleague or student. It can be physical, ranging from suggestive looks to indecent assault or rape, or verbal, ranging from belittling or suggestive remarks and compromising invitations to aggressively foul language or unwanted demands for sex."

The document outlines guidelines for university staff and students which urge victims of harassment to seek advice from personnel officers, friends, or staff representatives.

It details a list of people to turn to which include department heads, registrars, students' tutors and health centre staff. In serious cases formal complaints should be made under the grievance procedure. Staff and students are urged to keep a note of incidents to present as evidence.

The document stressed: "If you feel that you are being subjected to...harassment in any form do not feel that it is your fault or that you have to tolerate."

Staff and students are also urged to seek help immediately if they are subjected to physical assault.

The draft code has been circulated to vice chancellors, the teaching and students unions, the Equal Opportunities Commission, the Commission for Racial Equality and to the Hansard Society Commission on Woman at the Top. They have been asked to respond by October.

Improving Undergraduate Teaching

A big rethink of undergraduate education is under way in the United States as the leading universities try to meet criticisms that academics have pursued glittering prizes in research at the expense of teaching students for first degrees.

Concern that the quality of undergraduate education has declined–bigger classes and less contact with senior staff–comes at a time when the cost of tuition has gone on mounting. Many students attracted to a university by the excellence of its academics find themselves taught by teaching assistants, that is graduate students who are primarily concerned with their Masters degrees. The professors, at whose feet they hoped to sit, are busy with research.

Such is the concern that the Association of American Universities, the charmed circle of the 56 leading research universities in the US, decided to set up a committee on undergraduate education. It has been meeting all year and preliminary results of a survey of its members show that the majority are taking steps to improve undergraduate education.

They are setting up centres where teaching staff, graduate assistants and faculty members, may go to improve their teaching methods, and introducing new first-year courses to increase student contact with senior academics. Stanford University, in Palo Alto, California, for example, is expected to begin evaluating the quality of teaching through visits to classrooms, and assessing samples of graded papers.

Donald Kennedy, Stanford's president, in one of his addresses pointed to the neglect of undergraduates and the emphasis on research born of the fact that academics acquire tenure and attract funds by conducting research and writing papers. Teaching does not bring such rewards.

"There is a suspicion that we have lost focus in designing and delivering a well-planned, challenging and inspiring education for our undergraduates," he said. "It is time for us to reaffirm that education–that is, teaching in all its forms–is the primary task."

We Congratulate . . .

Prof. M.N. Farooqi who has been appointed Vice-Chancellor of the Aligarh Muslim University, Aligarh.

Book Review

Impact of Adult Education Programme

P.L. Kirkire*
V. Natarajan**

Evaluation Study on (i) Retention and Use of Literacy and (ii) Empowerment of Women, based on Adult Education Programme in Delhi. Educational Consultants Consortium, Delhi, 1990.

Both literacy and women's education are important components of adult education programmes and Educational Consultants Consortium should be congratulated for bringing out comprehensive evaluation studies on these two aspects. As is reported, "Both these studies have been conducted on a scale, perhaps not attempted before. Over 2500 respondents were interviewed on the basis of questionnaires embracing over hundred questions, practical excercises, discussion points etc. etc." The studies are based on Adult Education Programme in Delhi.

The report covers the background and evaluation aspects of the adult education programmes, right from the ancient times, besides also taking account of some of the earlier reported appraisal studies both outside and in Delhi. Based on these reviews, the following major observations were noted:

1. 'The tasks ahead to achieve universal literacy are both quantitative and qualitative, with an effective inbuilt system of monitoring and evaluation for both the programmes of elementary and adult education'.
2. Following parameters are reported important from the point of view of literacy and numeracy:
   —achievement of self-reliance in literacy and numeracy.
   —becoming aware of the causes of their deprivation and move towards amelioration of their condition through organisation, and participation in the process of development.
   —acquisition of skills to enable them to improve their economic status and general well-being.
   —imbibing the values of national integration, conservation of the environment, women's equality, observance of small family norm etc.
3. With regard to education and empowerment of women the task ahead is again not merely universalization but improvement in terms of:
   —building a positive self image and self confidence,
   —developing ability to think quickly, critically and act;
   —building up group cohesion and fostering decision making and action;
   —ensuring equal participation in the process of bringing about social change;
   —encouraging group action in order to bring about change in the society;

**Research Associate (UGC), AIU.*
***Director (Research), AIU.*

—providing the wherewithal for economic independence.

It was found that the focus of past studies was on ongoing projects only. It was also noted that very little had been done in the area of 'impact evaluation' by taking case studies of selected programme aspects. For the present purpose, the two aspects, namely: (i) Retention and use of Literacy, and (ii) Empowerment of women were selected for evaluation.

For Retention and Use of Literacy, main objective of the study is 'achieving self reliance' and for empowerment of women it is "imbibing the values of women's equality and observance of small family norms etc.". The respondents were selected from 1986-87, 1987-88, and largely from 1988-89 batches. Since the total programme coverage was for 32,080, approximately 10% to 2579, respondents were selected for interviews etc., through a well reasoned sampling procedure.

As reported the tools of data collection were well designed to obtain the qualitative and quantitative measurements pertaining to various identified indicators like level of reading ability, level of writing ability, nutrition, primary health, family planning, productive skills learnt, women decision making and influencing power, self-confidence etc., were included. Additional data on current status of Adult Education Project was collected from secondary sources.

Some significant findings of the study are summarized as follows:

(i) 24.84% of those responded retained excellent to very good on skill of loud reading.

(ii) The retention rate is higher for males.

(iii) Women have retained better on silent reading.

(iv) Non-literate women feel much more emboldened in taking important decisions in the family. Besides these, a lot of information is revealed in presenting a large number of tables and findings are also demonstrated through very illustrative bar diagrams.

(v) Literacy has helped in removal of many earlier handicaps viz.; facing outsiders, problems of children, behaviour of husbands etc.

(vi) The rights of women deserve a better deal in curricula, training of functionaries and teaching learning programmes.

In sum, it has been found that in most of the cases, the assumptions of the National Literacy Mission (NLM) have been confirmed by the study and there are also clear indications of some areas where the role of adult education has been marginal or even negligible. Literacy learning has neither contributed to improvement of job prospects for neo-literate women, nor given any extra mileage to the neo-literate women in so far as their positive attitudes towards cleanliness and family planning are concerned. Women are found to have enhanced their bargaining power indicating confidence.

It must, however, be said that the presentation of tables could have been more effective if integrated with pinpointed objectives and clearcut findings. A separate list of salient observations for tables would have added to the clarity but over all it is definitely a successful effort which would go a long way in contributing to the further plans of Adult Education Programme.

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Communication

Fall Out of Slavish Existence

Sir,

D.A. Ghanchi's diagnosis of the psycho-moral maladies affecting the life of Indian polity is correct and revealing. As a people we have been subjected to 'domination both by native as well as foreign rulers for a long time' ("National Concerns & Higher Education" *University News,* 17th Sept., 1990).

The admixture of contradictory behaviour patterns, however, may be explained as the natural consequence of survival instincts interacting with the will to defy domination.

The maladies have gone very deep, indeed. These have not only distorted our thought-patterns but even obliterated our cultural parameters. Our survival instincts have made us carry some of our rational concepts to absurd extremes. I shall give just a few examples. (If these shock the susceptibilities of some, our point will stand proved.) The concept of tolerance, for example, also manifested in euphemisms like elasticity of behaviour, adjustability, compromise and peaceful co-existence. Haven't these concepts, good in themselves, made us a nation of cowards and hypocrites? We tolerate even fissiparous tendencies, corruption, exploitation, casteism and worse; valour consists in not killing the enemy but 'giving up' our lives for the sake of the motherland! We hate poverty, but sustain it by giving doles and alms. We parade these as our cultural excellence!

We never tire of talking, of the need to act thus and thus, but all the time expect others to take the lead. This combination of passivity and duplicity of behaviour has played havoc with our march to progress and prosperity.

Ghanchi talks of solutions. But he forgets one vital question. From where exactly are we going to find men and women with character, integrity, vision and the determination to implement and execute these schemes?

Millennia of slavish existence have eroded our uprightness and left us without character and integrity. Exceptions are there. However, most of our values have been turned upside down. Without retrieving this character, without infusing into it a sense of fearlessness and determination, vision and purpose, no plan, no scheme, no system will ever succeed.

Education, proper education, alone can give us such men and women. But from where are we going to get the educators? the teachers? Many of us—the educators—have been surviving through licking the boots of bureaucrats and politicians. The low priority given to education is a shameful indication of this mentality, the mentality to keep us under domination for ever. Ignorant masses fed on empty slogans can never see through the clever design of the politicians. Ghanchi's enlistment of the national concerns will elude them altogether. His social, political, economic and cultural concerns automatically suggest lines of action. Tragically, however, those who can, cannot; the wherewithal and the authority will never be made available to them.

Two things are urgently needed—men and money. But with mischievous monkeys playing politics with public money and distributing favours for the sake of securing and nurturing so-called 'vote-banks', where shall we find the means to implement the schemes for education and progress?

We must congratulate D.A. Ghanchi for giving us plenty of food for thought. The question is: can we digest it all in the present state of our health?

P.P. Dayal
Secretary, Ranchi University
English Teachers' Association,
University Professor & Head,
Deptt. of English,
Ranchi College, Ranchi.

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THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

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Philosophy

1. Basu, Sutapa. *Consciousness and being in the philosophy of Sri Aurobindo*. Burdwan. Dr. Mrinal Kanti Bhadra, Prof., Department of Philosophy, University of Burdwan, Burdwan.

2. Bharkatiya, Renu. *Gandhi: Man of non-violence*. Devi Ahilya. Dr. (Miss) Shakuntala Sinha, Govt. Arts and Commerce College, Indore.

3. Bhattacharya, Amarnath. *Some problems in the philosophy of law*. Rabindra Bharati.

4. Biswas, Lilarani. *Swami Swarupananda Maharajer: A dhyatimikater aloke pradipta*. Rabindra Bharati.

Religion

1. Panda, Narsingha Charan. *Contribution of Maharshi Dayananda Saraswati and Arya Samaj to Vedanta literature*. Panjab.

Fine Arts

Music

1. Bhattacharya, Gouri. *Paschim simanta Banglar adivasi-o-lok sangeet*. D. Litt. Rabindra Bharati.

2. Mahadik, Prakash. *Bharatiya sangeet ke tantri vadhyon kee vadan shailiyon ka vishleshanatmak adhyayan*. Indira Kala. Shri Tulsiram Devangan, Kamla Devi Sangit College, Gandhi Chowk, Raipur.

3. Sharma, Yadvindra. *Himachal Pradesh ke Mandi tatha Bilaspur Jilon ke lokgeeton ka sangeetik paksh: Ek adhyayan*. Indira Kala. Dr. Manorma Sharma, Head, Department of Music, Himachal Pradesh University, Summer Hill, Shimla.

Language & Literature

English

1. Mathew, George. *An integrated stylistic interpretation for Ernest Hemingway*. Bangalore. Dr. S.K. Rangacharya, Reader, Department of English, Bangalore University, Bangalore.

2. Patel, Manjula K. *Women in Hardy*. Patel. Prof. R.A. Dave, Ex-Prof., Department of English, Sardar Patel University, Vallabh Vidyanagar.

3. Roy, Kalyani. *The new Chicago critics: A comparative study*. Delhi.

4. Sharma, Dalip Kumar. *Existentialist themes in William Golding's novels*. HP.

5. Solanki, Mrinalini. *Strategies of survival: A study of the psychological patterns in the novels of Anita Desai*. Rajasthan. Dr. (Mrs.) Santosh Gupta, Assoc. Prof., Department of English, University of Rajasthan, Jaipur.

6. Vaidyanadhan, R. *Social commitment in American drama of twenties and thirties with particular reference to Clifford Odets and Elmer Rice*. Osmania.

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1. Agrawal, Namita. *Rampaniwad ka natya sahitya*. HS Gour. Prof. R.V. Tripathi, Head, Department of Sanskrit, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

2. Bhattacharyya, Lakshmi Narayan. *Purva mimansar Dristite vakya mahavakya tatparya nirupaner upay sameeksha*. Burdwan. Dr. Gopinath Bhattacharyya, Prof., Department of Sanskrit, University of Burdwan, Burdwan.

3. Chande, Ranjana Madhukar. *Pandit Kshama Rao hyache vangmaya ani vyaktitva: Ek abhyas*. Nagpur. Dr. Bhar Upakhya Madhukar Aaptikar.

4. Dasmahapatra, Chhabirani. *A comparative study of the Rgvedic and Atharvavedic society.* Calcutta.

5. Mridha, Bidhanchandra. *Abhinava Gitagovinda of Purusottamadeva: A critical edition and study.* Calcutta.

6. Tatacharya, N.R. Shathakopa. *Shri Gopaltatdeshikvirachtaya swabhicharsamanyaniruktitipnaya: Sameekshatmak sampadnam.* BHU. Dr. Sudhansu Shekhar Sastri, Reader, Department of Vedic Darshan, Banaras Hindu University, Varanasi.

Hindi

1. Chaturvedi, Sheela. *Meera ke kavya mein prem, bhakti, saundrya tatha kavyashilp: Ek parisheelan.* Nagpur. Dr. Purushottam Rathi, Principal and President, P.G. Teaching Department of Hindi, Smt. Kasharbha Lahoti Mahavidyalaya, Amravati.

2. Deep, Hansa. *Sondhvadi lokgeeton kee samajik evam sanskritik prishtbhumi.* Vikram. Dr. M.S. Shukla 'Sudhesh', Prof., Department of Hindi, Govt. Post-Graduate College, Dhar.

3. Dhagay, Pandurang. *Sursagar ka samaj: Ek vishleshan.* Osmania.

4. Jain, Labhmal. *Acharya Hazari Prasad Dwivedi ka sameeksha darshan.* Vikram. Dr. P.K. Mishra, Prof., Department of Hindi, Vikram University, Ujjain.

5. Navila. *Vyaktitva vishyak bhavatmak sangyaon ka vishleshanatmak adhyayan.* Panjab.

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7. Saxena, Pratibha. *Malwa kshetra ke Hindi upanyason mein chitrit parivarik jeevan.* Vikram. Dr. D.P. Zhala, Prof., Department of Hindi, Govt. College, Shajapur.

8. Singh, Mithlesh. *Hindi upanyas sahitya 1936 se 1960 tak mein parivarik jeevan.* Vikram. Dr. Shiv Choursiya, Prof., Department of Hindi, Sandeepani Arts College, Ujjain.

9. Sudharma, S. *Mythological elements in the post independent Hindi dramas.* CUST. Dr. P.A. Shemim Aliyar, Reader, Department of Hindi, Cochin University of Science and Technology, Cochin.

10. Suman Kumari. *Samkaleen mahila kahanikaron ke patron ka samaj manovaigyanik adhyayan.* Panjab.

11. Upadhyay, Meherlata. *Mandla Jile ke adivasi lok geeton ka lok tatvik evam sanskritik adhyayan.* Durgawati. Dr. R.S. Mishra, Director, Kamta Prasad Guru Bhashi Bharati, Jabalpur.

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1. Khwaja Mujeeb Ahmad Qazi. *Urdu men aap biti nigari: Tahqiqi-o-tanqidi jayza.* Amravati. Dr. Mohammad Sadullah, Lina Pura, Jalgaon (Jamod) District Buldana.

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Bengali

1. Banerjee, Jayanta Kumar. *Samaj byaktidahrma, silpasammiti-o-Saratchandra.* D.Litt. Rabindra Bharati.

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4. Naskar, Sankarprasad. *Bangla upanyse romantic lakshan Bankim Chandra, Rabindranath-o-Sarat Chandra.* Calcutta.

Assamese

1. Hazarika, Minati. *A study of Vaisnava biographies of Assam.* Gauhati. Dr. S.N. Sarma, Prof. (Retd.), Department of Assamese, Gauhati University, Guwahati.

Khasi

1. Jyrwa, Mumtaz Bory. *A descriptive study of the noun phrase in Khasi.* NEHU. Dr. H.W. Sten, Department of Khasi, North Eastern Hill University, Shillong.

Oriya

1. Sabat, Snehalata. *Oriya reeti kabi o kavyasilpa.* Sambalpur. Prof. B.C. Acharya, Post Graduate Department of Oriya, Sambalpur University, Burla.

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1. Borkar, Ishwar Sadashiv. *A descriptive study of the Kosari dialect.* Nagpur. Dr. S.B. Kulkarni, Head, Department of Linguistics, Foreign and Indian Languages, Nagpur University, Nagpur.

2. Khire, Pratibha Dilip. *Mahayee Bhatt krit Leelacharitra ani Shri Govindprabhu Charitra: Ek taulnik abhyas.* Nagpur. Dr. S.G. Deshpande, Department of Marathi, Shri Nanthibai Damodar Thackersay Mahila College, Bombay.

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3. Udyavar, Suneethi. *K. Shankara Bhatta: A study restricted to his lished creative works in Kannada.* Bombay. Prof. C.K. Dixit, Head td.), Department of Kannada, University of Bombay, Bombay.

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ugu

1. Jaya Devi, B. *Pracheenandhra sahityahamulo pakshulu.* nania.

akshmi Narasamma, P. *The one act play in Telugu.* Osmania.

graphy

1. Bandyopadhyay, Bijoykumar. *A geographical analysis of kura District with special reference to solid and its impact on culture.* Calcutta.

2. Mazumdar, Ratan. *Spatial relations and economic development he Andaman Islands.* HS Gour. Dr. S.K. Sarma, Reader, partment of Geography, Dr. Harisingh Gour Vishwavidyalaya, ar.

History

1. Agrawal, Sushama Devi. *The role of Bairam Khan and his descendents in the Mughal Court and politics.* Durgawati. Dr. S.C. Bhowmik, Prof. (Retd.), 47, Narmada Road, Jabalpur.

2. Ajayan, T.B. *Indian National Congress and labour movement in India.* Calicut. Dr. P.K. Jose, Prof., Department of History, St. Joseph's College, Devagiri, Calicut.

3. Mishra, Baba. *State, society and culture of Orissa during 1435-1568 A.D.* Sambalpur. Prof. P.K. Mishra, Post Graduate Department of History, Sambalpur University, Burla.

4. Ping, Nityananda. *Contact between Orissa and South East Asia in Ancient and Mediaeval times.* Sambalpur. Dr. Patit Paban Mishra, Post Graduate Department of History, Sambalpur University, Burla.

5. Ram Singh. *Administration of Police and jails in the Panjab, 1861-1947.* Panjab.

6. Rath, Bijay Chandra. *Unrest in princely states of Orissa: Dhenkanal and Talcher, 1938-1947.* Calcutta.

7. Santra, Manas Kumar. *Land revenue administration in Birbhum under early British rule, 1765-1820.* Visva-Bharati.

8. Sharma, Madhu. *A study of the growth and progress of education in Himachal Pradesh, 1948-1980.* HP.

9. Sunanda Bai, K. *Gora: A biographical study.* Madras. Dr. Shalini Kopiker, Prof., Department of History, Presidency College, Madras.

10. Vare, Shankar Lal. *Malwa mein Marathi ka udhbav evam vikas, san 1720 se 1761 isvi tak.* Devi Ahilya. Dr. Kalpana Gangoli, Principal, Shri Mateshwari Suganidevi Girls College, Indore.

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posed Dates e Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
mber 1, 1990	National Symposium on Science and Technology in Ancient-India.	Topics proposed to be discussed include Astronomy & Mathematics, Metallurgy, Medicine, Aeronautics, Engineering, Computer Science and Artificial Intelligence.	B.M. Birla Science Centre, Hyderabad	Dr. B.G. Sidharth, Director, B.M. Birla, Science Centre, Adarsh Nagar, Hyderabad-500 463
ry 18-20, 991	Tenth State Level Academic Conference of Maharashtra Federation of College Library Association (MFCLA)	Themes include "Library Consciousness in Society."	Peoples College, Nanded (Maharashtra)	Mr. P.M. Jaiswal Convener Librarian, Peoples College, Nanded-431602.
21-26,	Seventh International Meeting of University Administrators	Themes to be discussed are: (i) Standards of Professionalism in University Administrations; (ii) International Cooperation; and (iii) The Entrepreneurial University.	Conference of Registrars and Secretaries and Conference of University Administrators of the United Kingdom.	Dr. F.C. Verschoor, Chairman Organising Committee, Congress Bureau, University University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands.

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5. Application forms may be obtained from the Institute's address given above, by sending a requisition, alongwith a self-addressed stamped envelope (23 x 10 cm) affixed with postal stamps of Rs. 1.50 ps. on or before **5th November, 1990.**
6. Application for each post should be seperate, indicating clearly the Advertisement Number, complete serial number of the post. In case of failure to comply with this conditions, the application is liable to be considered as invalid.
7. Applications duly completed (supported by attested copies of Degree/Diploma and statements of marks of educational qualifications, experience certificates, Community certificate (in the case of SC/ST Candidates), along with application fee (Non-refundable) of Rs. 8/- (Rupees Eight only) in the form of Crossed Indian Postal Order drawn in favour of the Director, National Geophysical Research Institute, Hyderabad, should be sent so as to reach him on or before **20th November, 1990.**
8. The Candidates of S.C. or S.T. Communities are exempted from payment of application fee.
9. Applications from employees of Government Departments/Public Sector Organisations/Government Funded Research Agencies will be considered only if forwarded through the proper channel, Certified by the Employer that the applicant will be relieved within **one month** of the receipt of the appointment orders, if selected.
10. Applications incomplete in any manner, are liable to be considered as invalid.
11. Candidates claiming to be of S.C./S.T. Communities, should invariably enclosed an attested copy of Caste Certificate issued by the Competent authority, along with their application, failing which the candidate will not be entitled to the concessions otherwise admissible to them.
12. Applications received after the last date viz. **20.11.1990** will not be considered.
13. More fulfilling of the minimum eligibility will not entitle the candidate to a call for interview.
14. A lower standard of suitability consisting with efficiency will be applied in respect of SC/ST candidates.
15. Higher start of pay may be considered in case of exceptionally maritorious candidates.
16. Candidates selected for interview will be paid single Second Class to and fro rail fare (by shortest route) from the actual place of undertaking the journey or the place of address for correspondence in the application, whichever is nearer to Secunderabad Railway Station, on production of relevant documents of travel.
17. Canvassing in any form and/or bringing of any influence, political or otherwise, will be treated as a disqualification for the post.
18. INTERIM ENQUIRIES WILL NOT BE ENTERTAINED.

K.R. Sarma
SR. CONTROLLER OF ADMINISTRATION

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Management of Higher Education in India

V.C. Kulandai Swamy*

Now and then we hear even from responsible quarters that higher education may not be given as much importance as has been done hitherto and attention may be concentrated on School education and more particularly elementary education. I may state as the first postulate that university education and school education may not be lumped together and much less pitted against each other for purposes of funding. It will be a distortion if we approach the problem with the premise, that the promotion of one is at the cost of the other. In the modern world, each has a role to play: the highest education for a few is as important as basic education for all. The former provides competent leadership and the latter an enlightened following in all walks of life. It is like the superstructure and the foundation; however basic it may be, foundation alone does not constitute a building.

There seems to be again a feeling that there are in this country, too many universities and colleges and too many boys and girls enter the portals of hgiher education. It may be true that in comparison with our performance in literacy and elementary education, we have done better in the domain of higher education. But we have done nothing in excess: we still fall short of the need, by whatever yardstick we may measure.

As of 1988-89, we have 169 universities, 6912 colleges and 39.48 lakhs of students in the higher education system.[1] It is certainly an impressive number, but by no means too may. The boys and girls, receiving university education constitute about 6% of the age group (1987) while many of the developing countries have a much higher percentage.[2] I may quote the percentage of age group receiving tertiary education in the few advanced and developing countries:

Advanced countries	U.S.A.	60
	U.K.	22
	FRG	30
	JAPAN	30
	FRANCE	31
	USSR	21
Developing countries	PHILIPPINES	38
	EGYPT	20
	THAILAND	20
	TURKEY	10
	BRAZIL	11
	PANAMA	28
	MEXICO	16
	VENEZUELA	27

It is realised that among the developing countries, India belongs to the low income group economies, while others mentioned above come under lower middle or upper middle income groups. There is no denying the fact that every country needs for development a critical mass of manpower with

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[Based on the Presidential Address delivered at the 65th Annual Meeting of the Association of Indian Universities held at Gujarat Vidyapith, Ahmedabad on 8th October, 1990.]

**Vice-Chancellor, Indira Gandhi National Open University and President, Association of Indian Universities.*

higher education and we must have an idea of the size of the critical mass for our stage of economic development.

It may also be mentioned that 88% of the enrolment in higher education in India is in the undergraduate classes, 1.4% in diploma and certificate levels and only 10.6% in postgraduate courses. Again such professional fields as education, engineering and others have a modest percentage of enrolment as shown below:[3]

#	Education	2.3
#	Engineering and Technology	4.6
#	Medicine	3.6
#	Agriculture	1.3
#	Veterinary Science	0.3

The problem of higher education in India is not intrinsically a problem of numbers: it is a problem of quality; problem of relevance and a problem of matching the preparation with the needs of the economy. We have to make a critical study of the demands of the developing economy on university education, apply our mind to the question of percentage of the age group that needs to be provided opportunities for higher education and then comment on the adequacy or inadequacy of numbers. Assuming for the sake of argument, that we stop expansion and maintain the numbers at the present level, which no doubt will not be easy to do, we will still have to make significant investment, to ensure quality and relevance in education, research and extension.

When we take a look at the world scene, we realise that, it stands divided into two camps:[4]

* the advanced countries, and
* the developing countries

Those living in advanced countries constitute (1987), about 23% of the world population and control 80% of the world resources. The remaining 77% have access to the balance of 20%. According to Prof. Abdus Salam, the Nobel prize winning scientist, the cause for this disparity is not to be traced to the language, religion, political system or economic organisation of these nations. He says that the people in the advanced countries happen to be what they are because of one dominant factor. He says:

> "To-day the Third World is only slowly waking up to the realisation that in the final analysis, creation, mastery and utilisation of modern science and technology is basically what distinguishes the South from the North. On Science and Technology depend the standards of living of a nation. The widening gap in Economics and Influence between the nations of the South and the North is essentially the Science and Technology gap".[5]

We are aware that:

* the capacity of a nation to create, master and apply knowledge in science and technology depends on its level of higher education and research, and
* the capacity of a nation to absorb science and technology depends on its level of literacy.

Therefore, as I said earlier, both need attention. In the modern world, we cannot afford to pursue one to the neglect of the other. I make this observation while fully conceding the paramount role of universal education as a major determinant in the quality of life and conceding again that we in India, for inexplicable reasons, have failed to make appreciable progress in that vital domain.

When we plead for investment in higher education, we do not close our eyes to the deficiencies of the system. We are aware of the fact that university education in this country stands criticised strongly, perhaps condemned by all: political leaders of all parties, administrators and members of the public. It has not been spared by the teachers and the students either. It has met with deep dissatisfaction from all quarters. One wonders as to who owns responsibility for a massive system, which despite all the condemnation has been expanding continuously and with hardly any major change. In the five year period from 1984-85 to 1988-89 we have added 1322 new colleges and 32 new universities which include 9 deemed universities and may I add—this impressive growth, after our proclamations made more than once that there shall be no further expansion in universities and colleges. The state of U.P. alone has added 507 colleges out of the 1322.

How do we account for the expansion mentioned above after having condemned the system on all platforms in the strongest possible language? I may mention that academics have played no part in this development. The question ultimately is one of identifying the inadequacies in the system. It is not one of lack of policy. Starting from the report of the University Education Commission (1948) headed by Dr. Radhakrishnan, and continuing through the reports of the Kothari Commission (1966), and the National Education Policies of 1968 and 1986 there are many recommendations that we accepted irrespective of differences in political and economic issues. The problem has been one of implementation. We did not implement what we accepted. Often we do not seriously mean to implement recommendations that we accept. Many may blame the non-implementation on financial inadequacy. Finance no doubt has been and is a constraint; but that has not been the main impediment. *The real weakness of the higher education system in India today is the weakness of its management. If there is one single aspect of higher education that deserves and warrants immediate attention, it is "the management of*

C.F.T.R.I. MYSORE

university education".

I may take the risk of saying that the country in general suffers from a management system that is totally inadequate, long outdated and unequal to the task. It is not capable of making full use of either the physical resources of the country or the immense human resources potential now available and developed at great cost and effort. It is a larger issue and I shall on this occasion confine myself to "management of higher education". It was in 1857, that the first three universities in India were established. Since then new universities were created; new colleges were started; but there was no statutory body for planning, developing, coordinating and maintaining the standards of higher education. It was in 1956, nearly 100 years after the establishment of the first three universities, that the UGC was established by an Act of Parliament. The higher education scene, in terms of numbers, programmes, complexities and challenges has undergone a great change since then, but its management system, including that of the apex body the UGC, has remained unchanged.

The parliamentary committee on higher education (1964) known as Sapru Committee recommended changes in the composition of the UGC. The Committee suggested the appointment of a few full time members and increasing the strength of the members from 8 to 15. The estimates committee of the parliament in its 102nd report also recommended full time members. The UGC Act was amended in 1970 providing for a membership of 12 of which three could be full time members. However, the Act was again amended in 1972 and this amendment made provision for a full time vice chairman in place of full time members. In 1977, the UGC appointed a review committee for reorganising the secretariat, but its recommendations have not been implemented.

The commission today is saddled with responsibilities of diverse nature. It discharges the functions of a state Directorate of Collegiate Education as far as the private colleges in Delhi and Delhi administration colleges are concerned: it plays the role of a State Ministry of Education for the central universities and assumes the responsibilities of a national body in the case of state universities, colleges and deemed to be universities in general. It has to deal with 169 universities, 6912 colleges and 2,50,000 teachers, not to speak of the numerous miscellaneous responsibilities that devolve on its shoulders. It has gradually, but steadily distanced itself from the affiliated colleges which account for nearly 88% of the undergraduate students and 57% of the postgraduate students. Many of these colleges hardly know the details of the programmes of assistance and promotional schemes introduced and administered by the UGC.

There is another aspect to the administration and management of higher education. The UGC is not "the Apex Body" that many seem to think. We have the ICAR for agricultural education the AICTE for technical and management education the IGNOU for distance education and numerous professional bodies like the Bar Council, Medical Council, Council of Architects, Pharmacy Council and others which do play a regulatory role on corresponding sectors of education.

* We need an apex body to: ensure coordination, avoid conflicts and facilitate interdisciplinary programmes and optimal utilisation of resources available.
* The UGC needs a major revamping in the light of the quantitative and qualitative changes that have taken place since its inception. It should be relieved of the special responsibilities it now has for the routine maintenance of the Central universities and colleges in Delhi.
* The UGC must establish at the earliest and pending any other reform, regional offices which can take over many of the routine functions that are performed at the centre. This need has been and is being voiced unanimously now in many forums and its implementation is a strongly felt need.

Though education now is a concurrent subject, and coordination and maintenance of standards is the responsibility of the Govt. of India, performed though the UGC, the fact remains, that major responsibilities for higher education, substantially rest with the State Govts. The establishment of universities, colleges, appointment of staff members and regulation of their service conditions and provision of funds are under the purview of the State Govt. Today we have in some of the States more universities, more colleges and more students in higher education than what we had in the whole of India put together at the time of independence. But the states today have no institutional mechanism to:

* review the status of higher education in the state and identify weaknesses and inadequacies;
* coordinate at the state level the activities of various universities and colleges within the jurisdiction of each university to ensure avoidance of purposeless duplication, utilisation of facilities in an optimal way and co-operative efforts in instruction and research;
* plan for expansion, quality improvement and funding on short and long term basis.

In the last four decades there has been, as said earlier, an unplanned growth in the domain of higher education. It has essentially been a linear expansion. We have not been successful in implementing many of the reforms recommended whether it be examination reform, job orientation or industry-institute collaboration. The programmes and measures for implementation have to come essentially from the states and they do not have the necessary management structure, supported by appropriate institutions.

It may appear strange, but it is true, that in establishing new universities and starting new colleges, the academics or the educationists do not play any role. They are hardly involved in policy formulation or decision making at the state level. If higher education is an investment, a teacher is neither the Chairman nor a Director in the governing body of the enterprise. He is the worker and supervisor in the factory. Consequently, developments in terms of colleges and universities did not have the benefit of the counsel and guidance of the academics. *Lack of academic leadership in the affairs of higher education is the single most important weakness that needs our attention today.* A forum for the training and emergence of educational leaders from among the academics does not exist.

It is with a view to meeting more than one requirement, that the UGC has been pressing for the establishment of the State Council of Higher Education. It is discouraging that this extremely worthwhile suggestion, which is crucial for proper planning, development as well as for decentralisation and promotion of autonomy in higher education has not been implemented except in two states. An expert committee constituted by the UGC to prepare the guidelines for setting up the council has stated as follows:

> "The State Council of Higher Education would act as a link between the universities and colleges and the State Governments and work closely with the UGC in view of its statutory responsibility for the maintenance and coordination of standards of higher education at the all India level".

As regards setting up the council, the Committee has recommended that:

> "...the Central Government may advise the State Governments for enacting legislation for setting up of the State Councils of higher education in the States".

Though it is one of the recommendations of the National Policy on Education (1986) and strongly advocated by the UGC for implementation, the Govts. at the states and the centre have been somewhat hesitant to move in the matter. I like to stress at this point that the establishment of this body would go a long way towards bringing professional approach to the management and promotion of higher education in the states.

I may refer to two more sub-systems in the higher education system, before I conclude: they are:

- the universities, and
- the affiliated colleges

Any objective evaluation would show that Indian universities suffer from:

- progressively diminishing autonomy,
- chronic deficiency in funding,
- increasing numbers of students and colleges over which the university has very little say, and
- an inadequate management system represented by outdated University Acts.

Inspite of all these limitations, and many omissions and commissions that may be legitimately laid at the doors of the universities, they have done well and given this country a reservoir of qualified manpower that the world acknowledges and we can be proud of. But the system has reached its endurance limit and needs immediate attention. When we refer to progressively diminishing autonomy, which today is a major concern *we do not mean autonomy for what the university wants to do; but autonomy as the guarantee of freedom to do without interference, what the universities are expected to do as per the objectives placed before them by the nation.*

The progressive diminution in the status and image of the Vice-Chancellor is perhaps by itself an indicator of the affliction of the system itself. Five times in the last few years, Vice-Chancellors have been removed en masse in a particular state in the country. The last occasion in the series was as recent as in June, '90. Another State Government promulgated an ordinance empowering the chancellor to remove the Vice-Chancellor, giving three months' notice or three months' salary in lieu thereof without assigning any reason. These developments would certainly have not improved matters in university education in the states concerned, but have done great damage to the institution of Vice-Chancellor.

Whether it is an advanced country or a developing country, a democracy, a dictatorship or monarchy, the office of Vice-Chancellor, variously designated as Rector, President, enjoys universally, an image and a status in the social and administrative set up. Nowhere has it been given this raw deal, to say the least. It is a matter to be wept with tears of blood.

It is not rule or regulation that really establishes discipline: it is not law that maintains order. It is not government that sustains culture. What matters in human existence are the institutions that society has built; the traditions that it has established and a value system it has evolved over the years. The culture of a society is made out of these building blocks: if they are destroyed for short term gains or for managing a fleeting situation, we forfeit the gains of generations.

In this country, the university system is invariably identified with the Vice-Chancellor. Whether it is fall of standards, poor performance in research, delay in publication of results or unrest on the campus, whatever the breakdown, the debris fall on the shoulders of the Vice-Chancellor. In the composition of such university bodies as the Executive Council, the Senate, the Academic Council and the Finance Committee over which he presides, he has hardly any say. His administrative, academic and financial powers, are only those derived from these bodies, by delegation. In most universities, the Vice-Chancellor has no inherent powers as such: but all responsibilities gravitate to him. I can think of no parallel office with so brief a term, so insecure a tenure, so limited an autonomy, and so many demands. It is an unenviable position from which already many senior academics of repute turn their faces away. Even this modest status is sought to be devalued or even demolished.

The authorities of the universities, in their composition, powers, functions and methods of operation have become outdated and unequal to the task. Their proceedings have become unacademic and they do not now provide a forum for any meaningful or serious discussion on planning, development, reform or new direction.

It may be asked as to what the Govt. of India can do since the legislative powers are vested in the States. I may quote here the example of the FRG, where education is essentially in the State sector. The Federal Govt. has framed what is called a 'basic law' (Grund Gesetz) which lays down the framework and the essential aspects of a university. The States formulate the acts within this framework. We may follow a similar approach towards regulating the governance of the universities in our country.

I come now to the colleges which constitute the subsystem in a university. The colleges are the places where higher education is really concentrated since, 83% of all the students, undergraduate and postgraduate together study. The affiliating system is peculiar to India and barring our neighbours Bangladesh and Pakistan, it does not exist anywhere in the world. This system has reduced:

* our colleges to tutorial institutions, and
* our universities to examining bodies.

It should long have been discontinued: the harm done by this affiliating arrangement to higher education is incalculable. We have nearly 7000 of them and one does not know what to do to redeem the position. The recommendation of the Kothari Commission to grant autonomy to colleges on a selective basis was a modest effort, but an innovative one, partly to free these colleges so selected from the stifling constraints of affiliation. We have made a good start in the 7th plan and have now over 100 autonomous colleges. It is really disheartening that an extremely well meaning, well conceived academic reform is sought to be termed elitist by some and thus discouraged. If conferring autonomy selectively on the basis of the preparedness of the institution is adequate ground for calling it an elitist measure, let us explore what may be done to raise as many of them as possible to the level of autonomy. Those who do not meet the requirement by 2000 A.D. may opt out of the university system and may offer suitable sub university level courses. We need take some hard decisions in this regard and take effective steps—but very definitely towards enlarging the family of autonomous colleges and not abridging or abandoning the programme.

In conclusion, I may say, that while we have somehow failed to assign proper priority to literacy and elementary education, we have done somewhat better in higher education. The need to pay greater attention to School education, should not result in allowing higher education to suffer a setback. The investment and effort needed even to ensure that the existing institutions reach a modest level of quality will be enormous. Considering the increasing numbers of boys and girls that knock at the doors of the universities and realising that many of them may be first generation candidates from rural families and backward classes, one does not know, how, even to check expansion.

Quality of education, relevance of content, problem of numbers and increasing emphasis on equity pose problems that are formidable. We need all the ingenuity and innovation to meet these challenges. In this effort, modernity and adequacy of management system deserve the highest priority and urgency of action among them.

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Professional Development of Teachers in Higher Education

Sunil Behari Mohanty*

Professional development of teachers is essential for qualitative improvement of any system of higher education. Professional development is concerned with development of knowledge and skill of the teachers. The individual is the main agency for professional development. The teacher can update his knowledge and improve his skill if he/she is sincere in effort and gets opportunity for development. The individual is able to provide necessary facilities for skill improvement. With the price of books having escalated in recent years, it is beyond the reach of a teacher to have even a few books every month. The institution is in a better position and takes up the responsibility. All good institutions have good libraries. These also run occasional programmes for skill development of teachers. The universities and professional bodies also work for professional development of teachers. The institutions and other agencies undertake professional development activities because of the reasons, such as, (i) concern to improve the quality, (ii) initiative by teachers to do research on teaching, (iii) competition among institutions compelling the old ones to look for alternative and innovative methods of instruction, and (iv) diversified student population which is not satisfied by the uniform teaching methods and styles. (CEPES 1987) In order to facilitate professional development of teachers, there should be Academic Staff Development Units. (Unesco Asia 1989) Such units should be opened in every college and every unitary university. In case of affiliating universities large sized units may be opened which can coordinate the activities of the units working in affiliated colleges and in the concerned university campuses.

Academic Staff Development Unit

Academic staff development unit is an innovation in the field of higher education. The functions of the unit may be categorised as (a) improvement of teaching, (b) improvement of research performance, (c) evaluation of teaching effectiveness, (d) enhancement of learning competence of students, (e) institutional research and investigation, (f) awareness-raising and dissemination of information, (g) maintenance of a resource centre, (h) mobilization of resources, (i) curriculum development, (j) development of academic knowledge and understanding, and (k) community service.

(a) *Improvement of Teaching*

The activities that may be carried out by the unit to promote improvement of teaching may be as follows:

(i) pre-service and induction programmes;
(ii) courses and workshops on teaching techniques;
(iii) workshop on assessment techniques;
(iv) consultancy services to individual staff;
(v) secondment;
(vi) conducting distinguishing teaching award schemes; and
(vii) identifying effective classroom teachers and providing opportunity for other teachers to observe them in action.

CEPES (1987) suggests that imparting training through individual consultancy via in-service training may be more effective than training through courses. In our country we had courses such as Diploma in Higher Education run by the universities of Madras, Baroda, Shivaji etc., and Master of Collegiate Teaching course by the University of Calicut. These courses could not be viable. These had to be closed. CEPES suggests the nature of useful strategies as follows:

> "Programmes should not concentrate on educational theory, for even though this subject may be interesting in itself, it would not simply appeal to the teachers concerned. Innovatory models and examples are to be constructed in such a way that they relate to the subject in which teachers are specialised."

Hence, the units should be more specific on relating the programme to the individual subjects. They should give more stress on application.

(b) *Improvement of Research Performance*

The activities that may be carried out for improvement of research performance may be as follows:

(i) Workshops on identification of thrust areas and topics for research;
(ii) Workshops on techniques of conducting research;
(iii) Workshops on guidance and management of research;

**Head, Department of Research and Innovation, Dr. P.M. Institute of Advanced Study in Education, Sambalpur-768 001.*

(iv) consultancy services for research management; and
(v) dissemination of information about research findings,

Every good teacher is a researcher. In fact good teaching is the outcome of research. Research helps teachers develop habit of remaining in constant touch with developments in the concerned subject. It helps develop the expertise of the teacher in certain area(s) of the concerned subject.

(c) *Evaluation of Teaching Effectiveness*

The activities to be carried out for evaluating teaching effectiveness may be as follows:

(i) workshops/seminars on techniques of evaluating teaching effectiveness;
(ii) evaluation of teaching by peers;
(iii) assistance to faculty members for assessment of their own teaching efficiency;
(iv) follow-up studies, etc.

(d) *Enhancement of Learning Competence of Students*

The unit may undertake various activities for developing the skills of teachers for enhancement of learning competence of students, such as,

(i) skills of learning, problem solving, critical thinking, planning one's own learning, time management and goal setting;
(ii) skills of library work—reading, note taking;
(iii) skills of listening, note taking in class and questioning.

(e) *Institutional Research and Investigation*

The activities to be carried out for promotion of institutional research and investigation may be as follows:

(i) Identification of areas of research;
(ii) Formulation of research proposals;
(iii) Funding for research;
(iv) Carrying out research;
(v) Reviewing research findings;
(vi) Experimentation on teaching methods and strategies through action research.

(f) *Awareness Raising and Dissemination of Information*

The activities that may be taken up by the unit for raising the awareness of the academic staff members and parents and for dissemination of information may be as follows:

(i) Dissemination of research findings related to improvement of teaching strategies and methods;
(ii) Conference of teachers and parents on learning environment at home and institutional problems; and
(iii) Seminar on various issues of education.

(g) *Maintenance of a Resource Centre*

The Resource Centre may have the following functions:

(i) Library facilities;
(ii) Audio-visual facilities;
(iii) Reprographic facilities;
(iv) Mobile collection/delivery facilities.

(h) *Mobilization of Resources*

The activities for mobilization of resources may be as follows:

(i) Awareness of sources and schemes of assistance for research;
(ii) Contact with various sources for funds for research;
(iii) Contact with sister units for their research publications;

(i) *Curriculum Development*

The activities that may be undertaken for curriculum development are:

(i) Review of the curriculum from time to time;
(ii) Development of curriculum—courses of studies and strategies;
(iii) Experimentation on curriculum—textbooks, courses, methods, etc.;
(iv) Development of handbooks, manuals and other instructional materials.

(j) *Development of Academic Knowledge and Understanding*

The activities that may be undertaken for development of academic knowledge and understanding may be as follows:

(i) Organisation of seminars, workshops, conferences etc., on various subjects;
(ii) Incentives to teachers to attend conferences, seminars etc., organised by professional agencies;
(iii) Financial assistance to teachers to purchase own books;
(v) Incentives to teachers to write books; and
(vi) Publication of books written by teachers.

(k) *Community Service*

The activities that may be undertaken for community service may be as follows:

(i) Identification of community needs;
(ii) Programmes for fulfilment of community needs; and
(iii) Relating research to community needs.

These are some of the functions of the Academic Staff Development Unit. Each unit has to decide the priority areas according to the needs of the environment in which it functions.

Professional Development Facilities in India

The professional development facilities in any country cannot be adequate. It requires much human and material resources. The position in India has been described by the Report of the National Commission on Teachers II (1986) as follows:

> "The survey data reveal that with respect to the performance in their research function, a fairly large percentage of teachers rate quite low, particularly at the college level. Hardly a quarter of the college teachers have published any article and hardly ten per cent any book. Even among university teachers, the situation is highly unsatisfactory: one-third of them have not published any article and about three-fourths no book. Lecturers had the least publications to their credit, but even a considerable percentage of Readers and Professors also did not publish any thing at all. Similarly, in terms of research guidance, a very small percentage of teachers (less than 10 per cent in colleges and less than 20 per cent in universities) performed this function. However, in terms of university positions, professors showed better performance than readers who in turn showed better performance than lecturers. In the case of colleges, however, there is hardly any difference between the different categories of teachers in this regard.
>
> (a) The low level of professional development is also reflected by the small percentage of teachers who acquired an M.Phil. or Ph.D. degree—only 7 per cent of college and 5 per cent of university teachers have an M.Phil. degree while only 17 per cent of college and 65 per cent of university teachers have a doctorate. These degrees were mostly acquired by teachers during the course of their employment. This is true for 13 per cent of college and 47 per cent of university teachers with respect to the Ph.D. degree.
>
> (b) The survey data also reveal the low level of participation of teachers in various programmes linked to their professional development. About two-thirds to three-fourths of the college teachers never participated in any seminar, summer school/workshop, training programme or research project. Even among university teachers, a considerable proportion (i.e. about one-third to half) of teachers did not participate in any such programme. Hardly a quarter of either college or university teachers availed of study leave. While the percentage of lecturers who did not participate in the various programmes related to professional development is very high, particularly in the colleges, it is surprising that a considerable percentage of readers and professors even in university departments also fall into this category."

Various agencies are working for the professional development of teachers of higher education. In case of general teachers, the University Grants Commission is the main agency. It has Centres of Advanced Study in various subjects located in various universities. These Centres provide research fellowhips and teacher fellowships. Teachers in service get allowances along with their usual salary and other allowances from their parent institutions. The UGC reimburses the salary and other allowances. The UGC has various schemes for improvement of colleges such as COSIP (College Science Improvement Programme), COHSSIP (College Humanities and Social Sciences Improvement Programme), etc. It also provides assistance to colleges to organise seminars, conferences, workshops, etc., at national, regional and state levels. It also gives assistance to teachers to attend conferences, seminars etc., in India and abroad. It provides grants for minor and major research projects. It also gives grants for publication and for writing. It also publishes journals for dissemination of ideas. Through Academic Staff Colleges, it imparts training to teachers. These colleges organise orientation courses as well as refresher courses.

The National Council of Educational Research and Training, New Delhi looks after professional development of teachers in higher education working in professional colleges devoted to teacher education. It gives grants for research, organises seminars, conferences, workshops and publishes journals for dissemination of ideas. The Indian Council of Social Science Research also undertakes professional development of teachers through grants for research, library study, publication of research reports, etc. It has many libraries located in its own regional offices as well as in associated institutions. There are also similar institutions like ICPR, ICHR etc., In case of science, engineering, technology etc., the organisations such as DST, ICAR, CSIR etc., have been promoting professional development of teachers.

Academic Staff Colleges as Academic Staff Development Units

To start with the Academic Staff Colleges can be converted into Academic Staff Development Units. In order to implement this idea, the Academic Staff Colleges need additional human and material resources. It may need a few research assistants, audio-visual assistants for computer, projector, VCR etc. It shall also need a vehicle to have mobile

(Contd. on page 18)

FEMALE FREEDOM

Hon'ble Prof. D.P. Chattopadhyaya, Governor of Ra, delivered the Convocation Address at the Fourth Convocation of Sri Padmavati Mahila Visvavidyalayam, Tirupati. Prof. Chattopadhyaya said, "Family is the basic social unit. If the female freedom is to be really vindicated, the necessary movement, the new value orientation, must start right from our own home. I am deliberately using the word "freedom" and not "emancipation" in the context of this problematique. Freedom is not a matter of charity to be given to this or that individual belonging to this or that caste, creed or sex. Whatever is given, and not earned by deserving it, can hardly be exercised and enjoyed in the real life situation." Excerpts

Convocation

"Education" does not appear to be the right word to denote the values for the cultivation of which the universities are founded and expected to function. Perhaps "learning" would be the more appropriate word for the purpose. The main characteristics of learning are (a) knowing more and more the world of possibilities within and without us, and (b) to try with increasing efficiency to express that knowledge in and through our words and works. Human possibilities are boundless. So are those lying hidden in the Nature around us. The society is a *tertium quid*, a linking bridge, between Self and Nature. The society which we ourselves create and, in turn, by which we are sustained may be enriched or degraded by us, depending upon the quality of our words and works. The world is one. Its segments are individual humans, their collectivity known as society, and Nature which pervades everything, from dust to divinity.

Education is not adequately symbolised in a diploma. Unless learning underlies the degrees for which diplomas are awarded, the latter turn out to be pieces of paper of dubious value. Often diploma is taken to be a mere job voucher. In the recent past I had the sad experience of seeing in my mail a number of returned diplomas by frustrated degree-holders. As Chancellor of the concerned universities, I do appreciate the frustration of the degree-holders. But there is a different way, perhaps a more proper way, of looking at the whole matter. Once it is sincerely realised that learning is not merely an exchange value, easily encashable in the job market and that it has its intrinsic worth irrespective of its market value, the grounds of frustration get gradually removed by a genuine sense of optimism.

Learning is self-rewarding. It is like a self-repairing biological process. Disvalues like anger, violence and frustration can gradually be repaired or removed by the delight of true learning. When I say this I do not minimise in the least the practical aspect of good education or what I call learning. It has been rightly observed by Vivekananda: God appears before the poor in the form of food. The so-called higher values like Truth, Good and Beauty, *satyam sivam sundaram*, do not awkwardly hang unsupported in the air. They do have their material and practical bases. In the process of education the learner must be familiarised with the same. Otherwise, asked to promote higher values in their individual and social life, they fumble and fail. Anger and violence are the painful outcome.

This explanation of the disvalues which adversely affect the learner is not to be taken as their justification. While idealistic non-conformism and righteous indignation towards man-made problems are understandable, perhaps even welcome, we must not allow ourselves to be easily swayed by the passions and emotions of the moment. The society cannot be said to be sane unless its citizens in general and its young learners in particular are committed to fight against the causes of poverty and suffering.

If the light of learning is the value we yearn for most, we all are equally duty-bound to take it to every nook and corner of the society. The curse of ignorance is the worst one can imagine. Ignorance born out of illiteracy should be taken as our main enemy against social progress and economic development. No society can be truly democratic unless each one of its members can somehow be made an active partner in its main decision-making processes.

Society is an abstraction unless it

is lived in and moved by its individual members. Economic growth is of little consequence to the poor unless it proves equitable in terms of both productive and distributive justice. And all these conditions are destined to remain unfulfilled without spread of literacy. Let us think of the magnitude of the problem of illiteracy. Out of every 100 school-going students 64 drop out by the age of 14. By 18 nearly 93 out of every 100 students get out of the school system. If the statistics is further refined, the finding is even more frightening. For example, out of every 100 school-going girls 98 drop out from the system by the time they are 18. When we recall that 50% of India's population is female and that no more than 2% of it beyond 18 remains in the stream of education, every right-thinking person is bound to be deeply disturbed. In addition to socio-economic backwardness, if we think of the educational backwardness of the female population, cutting across class, caste and other group barriers, we have every reason to be alarmed. The tremendous social inertia due to widespread illiteracy among the women folk largely accounts for our unmanageable demographic explosion and sluggish economic growth. It is not merely a metaphor that true education starts in the cradle with the mother's rhythmic lullaby. Learning is a life-long process to be inducted into the rhythm of life marked by its strife and lure.

Emerging out of the inertia of materiality life is a flame leaping to the height of heaven. Learning is like life itself. Firm-foot in the world of practice, it tries to go up and up through theoretical refinement, endless refinement, correction and corroboration. Its paradigmatic languages are mathematics and music. Both are marked by subtlety and harmony, homogeneity and precision. It is no wonder that from Kapil and Pythagorus to Bach and Einstein find a wonderful analogy between cosmology, rhythms of cosmos, and musicology, harmony and melody of music.

Freedom is the most basic value for all human beings, irrespective of class, caste and sex. To freedom we owe our birth and growth and towards freedom we move. All basic values, spiritual *(dharma)*, economic *(artha)* and somatic *(kama)* are auxiliary to and facilitative of freedom *(moksa* or *mukti)*. According to one interpretation of the human life, even death is no limit to its freedom. According to another, we are free until we die. Under both the interpretations, it is to be noted, life is an engagement and quest for endlessly unfolding freedom. Education is one of the fundamental means which, rightly used, makes us free. The forms of freedom are numerous, namely, (1) freedom from bodily suffering, (2) freedom from poverty, (3) freedom from oppression and exploitation. These forms of freedom are in the nature of freedom-*from* purported to remove some negative conditions of life. (4) Freedom, positively speaking, is blossoming forth in the fullness of life, realising its latent promises. (5) Freedom also means freedom to live in harmony with near and dear ones and without class and conflict. Without removing the causes underlying the negative forms of freedom it is impossible to achieve the higher and positive forms of freedom. Persons afflicted by illness and poverty and easy prey of oppression cannot taste what true freedom is.

Besides administration, education and self-consciousness are essential for doing away with negative forms of freedom. Spiritual freedom is not an unearthly ideal. From harmonious marital union to peaceful union with the whole of Nature or God is available, at least in principle, right in this world *(samsar)*. But to realise this freedom we need self-cultivation, self-realisation and support from the people around us.

If the women in our society are not as free as their own menfolk, the causes are not far to seek. I say "causes" and not "reasons". There cannot be any reason for denial or curtailment of women's freedom. What is responsible for this is some cause mainly due to the mindless male domination of the society. There is no gainsaying the unpleasant fact that male children, till the date, are in most cases preferred to the female children by the parents. We need not be disturbed by the exceptions to this sociological bias. The basic social problems have their roots in our individual attitudes, dispositions and actions.

Family is the basic social unit. If the female freedom is to be really vindicated, the necessary movement, the new value orientation, must start right from our own home. I am deliberately using the word "freedom" and not "emancipation" in the context of this problematique. Freedom is not a matter of charity to be given to this or that individual belonging to this or that caste, creed or sex. Whatever is given, and not earned by deserving it, can hardly be exercised and enjoyed in the real life situation.

Lack of female freedom is not peculiar to our time and society. Sometimes quoting ancient texts it is sought to be proved that the Indian women in the past were as free as their male counterparts. The contrary conclusion can also be easily established by quoting equally authentic sources. Let us not enter into the polemic on this issue. The truth is plain and every body can see it for himself. Not only in India but also in other countries, including the industrialised and the so-called modern societies of USA, USSR and Japan. One Indira Gandhi of India or Sirimavo Bandarnayeke of Sri Lanka or Golda Meir or Corzano Aquino or Margaret Thatcher is like a solitary swallow in the winter. They could not bring the summer of freedom in their societies despite their high office. The chilly winter of women oppression, though silent, is weighing heavily on the mind of the fair sex all over the world, except perhaps some tribal pockets here and there. Oasis does not disprove the desert. Rather, exception proves the rule.

I have often asked my friends in the USSR how many women could be member of the highest State policy-making body, Politburo, during the 73 years since the Bolshevik Revolution. To the best of my recollection, only one, and that too in the very recent past. I take the example of USSR deliberately. For in that country the percentage of women occupying high and key professional positions like doctors, engineers, academicians and managers are numerous. The case is perhaps even more dismal if we take up the example of USA, the most economically developed country. Not a single woman has ever been elected to the high office of President. Even in the cabinet composition the names of women figure very very rarely. The question is not one of number. The question is the ground level position of women in the society. Number is only an index to the sad situation marked by discrimination against and oppression of women.

I am saying this not because I am addressing the Convocation of Padmavati Mahila Viswavidyalayam. I say this privately and publicly because I have seen how my mother gave birth to 12 children between her age of 15 and 37. Of them 8 have survived. And I have seen for myself what the sufferings and pains are involved in bearing and properly rearing up even one child into full manhood. I have learnt this lesson not only from my home but also from the world at large, both developed and developing. As a Union Minister of Health and Family Welfare my intuitive idea got massively confirmed.

The point I am trying to make in this, to realise the ideal of women's freedom in a society like ours is extremely difficult. Lack of education, even literacy, lack of concern of the policy-makers and above all the indifference of a sizeable section of women themselves to the causes of their inequality are among the main causes of the sad state of affairs, this inequality, even inequity.

I am pained to see that often even this inequity is sought to be rationalised and moralised by highlighting the so-called difference in the biological and psychological make-ups of the women. The difference between man and woman is undeniable. But does it provide ground to draw a sharp line of demarcation between their morality and socio-economic eligibility? This trivial truism does not warrant, still less justify, the widespread oppression of women and the indignity to which a sizeable portion of them is subjected. The point may be looked from the reverse end. There are some distinct areas of social responsibility like teaching, nursing, electronic software handling and house-keeping where the superiority of women over men is clearly evident. But even in these sectors women's talents are rarely accorded highest recognition. How many female Vice-Chancellors, Directors-General of Health Services and Ministers of education we have in our country? The answer will unmistakably show that even those who are comparably qualified do not receive due recognition.

That is not the whole story. From driving long-distance trains and heavy-duty trucks to first-grade scientific and artistic works, given freedom, women are not inferior to man in the least. Why one has to argue this point at all? Is it not known to all those who matter in improving or degrading the lot of women in the society?

From Raja Rammohan Roy and Ishwar Chandra Vidyasagar to Mahatma Gandhi and Pandit Nehru have been highlighting the importance of women's education and freedom. But still the picture is extremely gloomy. Do we not read almost daily in the newspaper reports of dowry death in the urban areas covered by the media? One can well imagine what happens in the remote rural areas? Several well-researched studies on the subject are also now available. To tackle the situation we must launch a multipronged attack. First, we both men and women, must honestly re-define our psychological attitude to the problems of women, including our mothers, sisters, wives and daughters. The exercise should begin first in our own heart and then in our own home.

Secondly, the institutional approaches like setting up of women's educational centres, schools, colleges, universities and old-age homes are very important.

While it is tue that women must be allowed to choose their educational course according to their aptitudes, this principle should not be pushed to a point which might prove a handicap for the women in their competition in the job market or in the sphere of self-employment. Equality and social justice require educational and experiential comparability of the persons, irrespective of their sex.

Thirdly, regardless of their caste, creed and parents' income brackets, women as women should be given an added weightage in the matters of job, service and employment, both public and private. Though interim, as a policy this is a historical, economic and moral imperative. We have to clear the backlog.

Fourthly, scope for non-formal and distance education must be broadened keeping in view the severe disadvantages of women.

Fifthly, proper sex education and family planning measures should be made suitably available to the girls early in their life. Appropriate pedagogical methods are to be used for the purpose.

Sixthly, women must themselves realise their crucial role in preventing cruelty to and discrimination against women. Positively speaking, the crusade to promote women's cause must come from women themselves. This means both a psychological revolution and an institutional re-orientation. Voluntary organisations and educational course-contents have a big say in the whole matter.

Seventhly, the contemplated Women's Commission at the Centre must be given statutory powers with adequate executive teeth. It must be manned by perceptive and dedicated persons, preferably women. In the very use of the word "manning" the discerning ears can hear an implicit tone of male chauvinism even in language-use.

Eighthly, in this transitional period the social services of family counselling should be introduced and augmented. The Second World War, the partition of India and the increasing access of women to education and the job market have brought about a significant change in the women's attitude to family life, husband, children and in-laws, The role of highly educated and economically independent women is being silently frowned upon and tolerated and not appreciated and welcomed. Before it is radicalised in the wrong way creating avoidable problems, some sober counselling from competent persons is urgently called for.

Ninthly, economic independence of women in terms of actually enforceable laws of marriage, divorce, separation, succession and inheritance is extremely important. Most of our legislations pertaining to women's welfare are dead or remain idle in the book of statutes.

Finally, all of us, well-meaning citizens of the country, have to soberly ponder over the problems of women without sex bias or prejudice, honestly realise that they constitute at least half of the potentially available human resources and must act accordingly. What women need most is not sympathy but deserving support.

The young women of today need not forget their female identity nor should they be obsessed with it. After all and above all we are human beings. Essentially we are all spiritual beings, *purusas*, to use the technical word of Samkhya philosophy. The spirits are not characterised by their sex. Their

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essence is consciousness. It is by elevating this consciousness in terms of learning the secrets of Nature, physical, biological, psychological and sociological that we can make ourselves worthy individuals of a worthy society. The universe beyond the boundary walls of the university is full of problems as well as opportunities. When you formally say goodbye to your *Alma Mater*, do not forget your non-repayable debt to it. It is not enough to feel nostalgic about it in the later life. Time and again please return to it in mind and body with loving concern and helping hand. It is by these two things, concern and help, that in the west some of the best universities like Harvard. Princeton and Columbia have been able to become better than the State universities dependent, almost exclusively, on the government grants. Even if we give a tiny fraction of our annual income to our *Alma Mater*, one day in future it can be a better foster mother to the successive generations of students. Let us exceed our private concern at least in a modest measure so that our educational system can be benefited, can be better equipped and more free than it is today. If the outgoing students do not care for their parent universities, who else are supposed to care for them more sympathetically and with deeper concern?

Please do not be afraid of the world outside home and college. As one who has seen it for nearly six decades and from very many angles I can tell you honestly that it has its own charms, challenges and invitations. Earnestly try to be equal to the tasks assigned to you by your graduation and maturation. When you will face the problems of life with courage and confidence, they get smaller and smaller in size and you become taller and taller in stature. □

A Call to Civil Society

Statement made by Prof. Yash Pal and endorsed by Vice-Chancellors from Indian Universities at their All India Conference at Ahmedabad on 10th October, 1990.

"Last year, we had met at Srinagar, Kashmir. While discussing various aspects of higher education, in that beautiful city, we agonised over a threat to the very concept of Indianness, from the then impending imbroglio over the Ramjanam Bhoomi–Babri Masjid issue. We decided to appeal to all concerned to hold back, to effect a phase change in our way of thinking and, as a symbol thereof, to convert Ayodhya into a major cultural centre, representing the tapestry of India, with a beautiful temple, mosque, gurudwara and church, while moulding and reshaping "historical memories".

We meet now, a year later, when our friend and host in Kashmir, Prof. Mashrul Haque, the Vice-Chancellor is no more, a victim of mindless terrorism. Also some new focii of dissension have been added to those which surrounded us last year, and Ramjanam Bhoomi-Babri Masjid issue appears again moving towards a potentially explosive stage.

We appeal to all those who would force the issue to desist and exercise restraint, especially when the Constitution ordains respect by all citizens towards the rule of law—values as enunciated by the judiciary. Any so-called victory through force or rousing passions would be like ashes in the mouth; the already battered social fabric of the country may not be able to withstand this blow.

It is truely possible to wake up from our hypnotic drive towards peripheral sectoral mirages and begin a cooperative mass effort to bind our wounds and move our society.

The agenda are clear and the means are available. Let us stir out to educate our people—and be educated in return. Let us engage in "greening" our country and wiping out the spreading environmental blots on our land and our waters. Let us clear our tanks and rivers and make the forests bloom. Let us educationalise our vocations and engage in them with dignity and purposefulness. Let us wake up to face the ever mounting pressures from arrogantly affluent societies (North) and stop the drift towards becoming an intellectual, spiritual and economic colony. This is not the time to sit, or dither, or add to the friction and viscosity of our journey, which is so very slow already.

There are, and will remain, points on which we differ. That only shows that our democratic impulses are alive. But differences don't have to become corrosive. We should voice our concerns and listen to others. Let us become a civil society, if we can. Let us become and remain responsible to the true vision of Swaraj to which Mahatama Gandhi summoned all future citizens of India."

Linkage Between Mathematics and Industries

The Department of Mathematics of the Aligarh Muslim University, in collaboration with Kaiserslautern University, Germany, recently organised a three-day International Symposium on "Differential Equations and Industrial Mathematics." The focal theme of the Symposium was to highlight those techniques and tools of Mathematics which are effective in understanding the solutions of differential equations and mathematical models occurring in different areas of Science and Technology particularly in Industries.

Inaugurating the Symposium, Prof. H. Neunzert, President, European Consortium of Industrial Mathematics, Germany appealed the mathematicians to leave their ivory tower and come forward and work in the Industry. He said, "what we tried was not to establish a new field-Industrial Mathematics but to find a new way to challenging existing problems, a way to use our knowledge to the best of our Society and the country."

Prof. M.Z.R. Khan, the then AMU Vice-Chancellor, presided over the inaugural session.

Prof. A.H. Siddiqi, Director of the Symposium in his welcome address emphasised the importance of applications of mathematics in different disciplines and said that it had started studying those branches of mathematics which might be applicable to real life problems. He admitted that the planners of Mathematics education in India had not paid as much attention to these areas as the developed countries like Germany, Italy, France, U.K. and USA. He hoped that the Symposium would provide joint efforts to the teaching & research in these areas in the Indian universities and research institutes in solving some of our national problems relating to industries and real solutions.

Prof. P.C. Das from I.I.T. Kanpur said in his paper that the equilibrium Surface Problem had acquired increasing importance and large groups of people were now engaged in studying different aspects of Laplace Young equation lies in which it leads.

While presenting a paper on "Industrial Pollution Problems and their approximate solution" Prof. V.P. Saxena of Jiwaji University said that the Industrial development was an essential part of human activity these days. Rapid growth of Industry caused various types of pollutions in the environment. He pleaded the use of mathematical modelling followed by its Scientific analysis.

Prof. Das mentioned that an attempt has been made to correlate such variations with the approach of investigating concentration distribution using approximate methods of solution, mainly Finite Element Technique and its modified forms.

Prof. S.V. Krishna in his paper pointed out that the trader trying to increase his profit by unscrupulous means, tries to hike the prices through speculation and worse by hoarding.

He determined the conditions for the prices to be in the reasonable vicinity of an equilibrium level and added that these conditions could be interpreted as the price fixing and controlling policies of the State.

Majority of the delegates felt that the Industrial Mathematics was becoming a fascinating subject which provided an effective linkage between Mathematics and Industries. Somehow, in India, we were very much lagging behind in this vital field, they opined.

A group of mathematicians discussed the feasibility for establishing a Society, which could take up the task for the promotion of teaching and research of certain fields of Mathematics which had direct applications in Industry. These specific subjects could be eventually applied to the problems of industries and technology.

In the concluding session, the Indian Society of Industrial Mathematics was established and Prof. A.H. Siddiqi, Chairman, Deptt. of Mathematics, A.M.U., was elected as its Secretary.

A large number of delegates including Prof. Martin Brokate (Germany), Prof. Rene Lozi (France), Prof. F. Scarpini (Italy), Prof. Khodadad Khan, Prof. M.S. Rehman and Mrs. Kohinoor Begum (Bangladesh) participated in the Symposium.

Orientation Programme at HP University

The Academic Staff College of Himachal Pradesh University organised its Sixth Orientation Programme from September 3-29, 1990. Inaugurating the programme, Prof. K.C. Malhotra, Vice-Chancellor of the University stated that the teachers had a greater onus of shaping India of today and tomorrow. The job was vital but ticklish one. Being the harbingers of change they were expected to enrich the education system in particular and society in general with useful knowledge, love, compassion, sympathy, forbearance, serenity and patience, he added. The nation, he said, achieve the principles of egalitarianism, secularism and socialism enshrined in its constitution only with teachers help. A stagnant teacher, he opined could cope us with the expanding volume of knowledge, meet the learning needs of students and solve the problems of society. For an effective teacher there was no substitute except continuous learning and interacting with his students, various systems and his cohorts.

Prof. Malhotra added that the

most important task the orientation programmes were supposed to perform was developing a positive attitude and motivating teachers to develop their personalities through multiple strategies. Like any individual, a teacher required right type of stimuli whereby he introspected his own strengths and weaknesses, he said.

The main stress of the programme was on improving the analytical and evaluative abilities of teachers about the immediate environment, sharpening the teaching & research skills and developing the personalities of teachers. In order to realise the objectives, various intervention strategies were utilised. The participants were intensively involved through various activities like, brain-storming, fish-bowling, think-tank, theme of the week, thought for the day, nominal groups, workshops, presentations and warm-up sessions.

Formal lecturing was enriched with audio and visual presentations. Informal and non-formal interactions were added to formal learning. The participants were motivated and inspired by encouraging them to participate in the discussions, management of programme and completion of workshop assignments.

Monitoring and evaluation was an integral part of the whole programme. The orientational need was assessed through pre-orientation awareness test, awareness quiz and discussions. The performance of each participant was evaluated through certain objective criteria such as participation in discussions, debate, symposia, written test and presentations.

Addressing the Valedictory function, Prof. Malhotra said that the knowledge and abilities of a nation were of little use if they were not scientifically utilised. The teacher, he said, had a special role to develop inquisitive thinking among his students. For the development of prosperous and thinking society, it was essential that its citizens had logical, analytical and systematic outlook towards life.

Prof. Lokesh Koul, Dean of Studies, Himachal Pradesh University, in his presidential remarks said that in these days of crisis the teacher was expected to play a vital role and work towards bringing back peace in the society. He was of the view that the national leaders, bureaucrats and others should consult the teachers before taking any policy decisions.

In this four-week programme, teachers from various universities, namely, Sardar Patel University, Agra University, Bundelkhand University, Meerut University, Vikram University and Himachal Pradesh University participated.

Courses in Fieldwork in Geography

The Centre for the Study of Regional Development (CSRD) in the School of Social Sciences of the Jawaharlal Nehru University offers two compulsory courses to M.A. (Geography) students based entirely on field work. Field work is undertaken during holidays. The main objective of the courses is to train students in various methods of fieldwork in geography.

Course No. RD-415 involves study of various geomorphic processes. The students have been going to the higher parts of Himalayas for fieldwork since 1973 and have been studying fluvial, glacial, lacus rine, mass wasting and weathering processes operating therein. As per the requirements of this course, different area/valley is selected every year for survey and the students along with the course incharge trek on foot for a distance of about 200 kms to 250 kms. They make observations regarding geomorphic processes and identify various features on the way. Two or three villages are also selected for a detailed survey in order to understand Man-Environment interaction in these areas of hostile environment. Students conduct survey at household level with the help of a questionnaire. Apart from the field report, the students also write a daily field diary on the basis of their observations of geographical phenomena. Evaluation is done on the basis of field report, diary field participation.

UNDP Assistance to NPL

Mr. Erling Dessau, Resident Representative of the United Nations Development Programme (UNDP) in India has approved on behalf of the Administrator, UNDP an assistance to the National Physical Laboratory (NPL), New Delhi, to identify processes to check surface degradation of materials used in micro-electronic and high vacuum industries in India's tropical climatic conditions.

The UNDP contribution of US $1,070,000 will be used to purchase equipment, provide experts and train staff. The Indian Government, for its part, will contribute approximately Rs. 6.7 million.

The project activities will support the country's efforts at upgrading micro-electronic and high vacuum technology by advising the industry on the use of the most appropriate materials in the fabrication of components for micro-electronics which can withstand the tropical climate over a long period. The timeliness of this activity is significant as the country is poised to produce micro-electronic components worth Rs. 3,000 billion by 1995 from its present access to assembly technology with a domestic turnover of Rs. 100 billion.

As custodian of the country's standards, the National Physical Laboratory will determine the causes for the long term instability of standard mass materials and possible methods to enhance their stability. The testing and calibration facilities acquired with the help of the project will be extended to the industry through the establishment of national centres which will help the industry to maintain the required standards and ensure quality products.

Microwave Radiation Monitor

A radiation monitor capable of detecting microwaves over a wide range of frequencies (0.2—10.0 GHz), has been successfully designed, developed and tested in the School of Environmental Sciences of the Jawaharlal Nehru University. The instrument can be used to measure background radiations fields near radar installations and leakage fields from microwave ovens, much below the accepted safety level.

According to Dr. J. Behari, Associate Professor at the School, this instrument can be used for microwave dosimetry and hazard assessment. The instrument is portable, requires no power source, easy to calibrate and is inexpansive. It can be easily manufactured on a large scale and the component cost is less than Rs. 1000/-.

Population Ecology and Health

A two-week National Workshop on Population Ecology & Health, sponsored by University Grants Commission, is proposed to be held at the Department of Genetics, Barkatullah University, Bhopal from December 29, 1990–January 11, 1991. The likely areas to be covered are Environmental Mutagenesis, Gene Ecology & Human Health, Epidemiology, Ecology & Cytogenetic Variation, Population Control, Genetic & Chromosomal Variation in Cell Cultures etc. Young faculty members, PDF's and SRF's who are already working in these areas or willing to enter such areas are eligible to participate. Further details can be had from Dr. N.C. Sharma, Department of Genetics, Barkatullah University, Bhopal-462 026. The last date for receipt of applications on plain paper is November 15, 1990.

Workshop on Performing Art

The Board of Extra-Mural Studies of the North Gujarat University recently organised a 7-day workshop on Performing Art. The workshop covered the entire gamut of art including production, direction, rhetorics, acting, stage-craft, total theatre, music, dance and hardware and software.

As part of the programme three plays, one of them being a Bhavai, another a Greek tragedy and the third a one-act play were staged. Prof. Yashwant Shukla, Ex-Vice-Chancellor, Saurashtra University, provided an invigorating critique of the three-fold performance.

Thirtyfive students, from twentyone colleges of the University, underwent a rigorous participative experience at the hands of proven artists and experts in the field.

Training Course in Parliamentary Practices

The Bureau for Parliamentary Studies and Training of the Gujarat Legislative Assembly organised a two-day training course for the students of the North Gujarat University in September, 1990. The course was intended to acquaint the students with parliamentary procedures and practices and develop in them a positive attitude to and faith in democracy as a way of life.

The programme consisted of lectures, discussion, question answer sessions, group study and interpersonal encounters. The subjects discussed included parliamentary democracy, rules and traditions of Assembly's functioning, procedures of passing bills, the nature and importance of the question hour, relationship between the legislature and the executive, and the preparation, role and functions of a parliamentarian in the representative democracy.

News from Agril. Varsities

Sir Chhotu Ram National Award

Sir Chhotu Ram National Award for outstanding research in agriculture and rural development has been constituted at Haryana Agricultural University, Hisar. The award consists of a prize of Rs. 10,000.00 in cash or kind and a citation for outstanding research. The scientists from all over India engaged in the field of agriculture, social sciences, animal husbandry, forestry, fishery, home science, basic sciences and humanities working at educational institutions, voluntary organisations, government or private agencies are eligible for the award. The award will be presented to the scientist whose outstanding research work has led to the improvement in agriculture or rural sector of India. Before presenting the award, the work of the scientist would be judged by a duly approved committee on the basis of the result of research achieved or contribution made by him during 5 years preceding the year of the award 1990.

For the award of the year 1990-91, eligible scientists may apply to Dr. Dool Singh, Secretary, Sir Chhotu Ram National Award, Department of Agricultural Economics, Haryana Agricultural University, Hisar on a format giving their credentials by 30th November, 1990 alongwith an entry fee of Rs. 25.00 only.

News from UGC

Countrywide Classroom Programme

Between 24th October to 31st October, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

1st Transmission
1.00 p.m. to 2.00 p.m.

24.10.90

"Field Channels"

"Old Temples of Dwarapat"

"Mitosis & Meosis"

25.10.90

"COBOL-5: A Review"

"Mesolithic Society"

"The Language of Science"

26.10.90

"A Talk on What is the Study or Astrophysics"

"Felicitious Folklore"

"Green House Effect"

27.10.90

"Rasa Ranjita: Understanding Indian Dance 5: Bharatnatyam-II"

"Middle Indian Cinema: A Ticket to the Future"

"Fun With Fins"

28.10.90

No Telecast

29.10.90

"Classical Mechanics-5: Pseudo-Forces"

"Land Management"

"Earthworm Anatomy"

30.10.90

"Equilibrium"

"Learning it's Nature and Characteristics: The Nature of Learning"

31.10.90

"Hour USA: OMNI—The New Frontier, Under Water Baby; Coffin Hatel etc."

"The Pursuit"

2nd Transmission
4.00 p.m. to 5.00 p.m.

24.10.90

"Efficient Structural Forms-I: The Truss System"

"Music in Marble-II: Luna-Vasahi"

"Hair: Cables of Information"

25.10.90

"Computer Memory-III: Direct Access Storage"

"Impact of October Revolution on Indian Literature-II"

26.10.90

"Chinese Postman Problem-I"

"Sociology and Social Relevance-I"

"Bamboo—The Miracle Grass"

27.10.90

"Rabindra Sangeet-II"

"A Touch of Adventure-I"

"Modern Art"

28.10.90

No Telecast

29.10.90

"Fluorescence Spectroscopy"

"Management-12: Bureaucracy"

"Earthworms-II"

30.10.90

"Properties of Chlorides and Oxides of Period III Elements"

"DNA Finger Printing-I: Technique"

31.10.90

"Hour USA: OMNI—The New Frontier, Under Water Baby; Coffin Hotel etc."

"The Pursuit"

News from Abroad

Teaching Gets More Stressful

A survey conducted by the University of Birmingham's school of psychology and published recently by the Association of University Teachers (AUT), United Kingdom, reveals that more than three-quarters of university academic staff find their jobs more stressful now than in recent years and many expect stress to get worse.

Inadequate pay and resources, conflicting job demands and poor promotion prospects were blamed for growing job dissatisfaction and the results reveal that almost two thirds of respondents had recently considered careers outside university employment. More than 57 per cent said that if they were starting their careers now, universities would be considered an unattractive prospect.

New management styles were generally unpopular. Less than a third of respondents thought recent management reforms had increased the efficiency of the running of institutions, while 44 per cent claimed a reduction in efficiency.

Dissatisfaction with salary was found to be most severe among younger staff, peaking between the ages of 30 and 39. But unhappiness about increasing job demands increased linearly with age as did concern over promotion prospects and job security.

Research staff showed particular concern over job security, with some 54 per cent reporting worries. Researchers were also more concerned about promotion prospects, and reported more serious feelings of isolation than any other staff group.

Poor resourcing levels affected library and academic teaching staff the most, while administrative staff reported the highest dissatisfaction over increased job demands.

Staff across all categories showed concern over salary levels and institutional recognition of worth. More than 40 per cent of all staff said inadequate salaries were an important source of dissatisfaction while 29 per cent mentioned lack of institutional recognition.

Behind the complaints lies a history of financial stringency, according to the AUT, including dramatically higher staff student ratios, uncompetitive salaries and inadequate equipment. The AUT said: "The report highlights that the goodwill invested by staff is under severe stress and action must be taken if irreparable damage is to be averted." More than three quarters of staff said their jobs had become more stressful recently, and 60 per cent feared this trend would continue.

The key problem was uncompetitive pay, according to the AUT. "There has been a 20-year decline, relatively, and in absolute terms stagnation," said the AUT. "This above all must be tackled and put on a sound long-term basis."

Professional Development of Teachers in Higher Education

(Contd. from page 8)

collection and delivery of library as well as audio-visual materials, a better library and a computer room and an audio-visual aids room. The nature of the programmes being conducted in the colleges can be changed. There should be more stress on skill development. In fact it should receive 75 per cent of the allotted time. There should be more of observation, practice, application and evaluation.

Conclusion

It is high time that the University Grants Commission should consider the possibility of opening Academic Staff Development Units. The seniormost teacher of each college or each unitary university may be kept in charge of this academic staff development unit and paid honorarium for the purpose. To start with certain amount of financial provision has to be made for the purpose. The colleges may charge extra amount from the students for the purpose for ultimately the students are going to suffer because of inadequate professional development of their teachers. □

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1. CEPES (1981) Symposium on the inservice and continuing training of higher education personnel in Europe in the context of lifelong education. In *Higher Education in Europe* 6,1, January-March.
2. CEPES (1987) *Inter Regional Workshop of European Network on Staff Development.* Unesco, Paris.
3. CEPES (1987) *University Teaching and the Training of Teachers.* ECHE, Bucharest.
4. Johnson, R. (1982) *Academic Development Units in Australian Universities and Colleges of Advanced Education.* AGP, Canberra.
5. Ministry of Education (1966) *Report of the Education Commission (1964-66).* Govt. of India, New Delhi.
6. Ministry of Education (1986) *Report of the National Commission on Teachers-II. (1983-85).* Govt. of India, New Delhi.
7. Sloper, D.W. (1989) *Academic Staff Development: Policies and Issues from an Australian Perspective.* RIHE, Hiroshima.
8. Unesco (1985) *Report of a Regional Workshop on Academic Staff Development, Armidale, Australia, November 5-16, 1984.* Unesco, Bangkok.
9. Unesco (1989) *Academic Staff Development Units in Universities.* Unesco, Bangkok.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to the AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A list of Research Scholars registered for Doctoral Degrees in Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Amma, K. Nirmala Kumari. *Some studies on ideals and filters in groupoids*. Kerala. Dr. V. Sathyabhama, Prof., Department of Mathematics, University of Kerala, Kariavattom.

2. Singh, Prem. *General relativity*. BHU. Dr. Shree Ram, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

Physics

1. Nayar, Arvind. *X-ray absorption studies of some inorganic compounds*. Vikram. Dr. B.D. Shrivastava, Prof., School of Studies in Physics, Vikram University, Ujjain.

2. Parui, Raman Kumar. *Stellar evolution to and beyond neutron star*. Manipur. Prof. H.N.K. Sarma, Dean, School of Sciences, Manipur University, Imphal.

3. Shibu, S. *Investigation on the atmospheric dynamics*. Kerala. Dr. S.R. Prabhakaran Nayar, Reader, Department of Physics, University of Kerala, Kariavattom.

Chemistry

1. Sabu, K.R. *Surface supported transition metal oxide catalysts for the alkylation of aromatic hydrocarbons*. Kerala. Dr. C.G. Ramachandran Nair, Prof. and Head, Department of Chemistry, University of Kerala, Trivandrum and Dr. K.V.C. Rao, Director, Chemicals Group, VSSC, Trivandrum.

Engineering & Technology

1. Balwinder Singh. *On the computer oriented approach to the optimised design of digital systems*. Panjab. Dr. T.S. Kamal, Assoc. Prof., Department of Engineering and Technology, Panjab Engineering College, Chandigarh.

2. Rai, Jai Prakash. *Sintering studies on refractory oxides*. BHU. Dr. G.N. Agarwal, Department of Ceramic Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

BIOLOGICAL SCIENCES

Forensic Sciences

1. Agrawal, Raj Kumar. *Pharmacological and toxicological studies of some Indian poisonous plants*. HS Gour. Dr. H.S. Maheshwari, Reader, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

2. Khare, Pramod Kumar. *Synthesis of some new bioactive heterocyclic compounds*. HS Gour. Dr. D.K. Mukharya, Reader, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar and Dr. (Mrs.) Savitri Devi Shrivastava.

3. Nigam, Jagdish Prasad. *Forensic studies pertaining to some muzzle-loading fire-arms*. HS Gour. Dr. H.S. Maheshwari, Reader, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

4. Raina, Anupama. *Toxicological and pharmacological properties of some Indian medicinal plants with special reference to*

antifertility and abortifacient. HS Gour. Dr. S.C. Choudhary, Lecturer, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

5. Sobha, Devendra Kumar. *Pharmacological and toxicological studies of some medicinal plants with special reference to their antifertility activity.* HS Gour. Dr. H.S. Maheshwari, Reader, Department of Criminology and Forensic Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Biology

1. Manzoor Ahmad. *Host-virus interaction: A molecular approach.* BHU. Prof. (Mrs.) M. Chakravorty, Department of Molecular Biology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

Biochemistry

1. Bhalerao, Veena. *Tribulin activity in cardiovascular diseases.* BHU. Prof. S.S. Dubey, Department of Biochemistry, Banaras Hindu University, Varanasi.

2. Gupta, Ruby. *Study of serum lipids, lipoproteins and lipoprotein transport cholesterol in diabetes mellitus with reference to nutritional status, mode of therapy and diabetic complications.* BHU. Prof. S.S. Dubey, Department of Biochemistry, Banaras Hindu University, Varanasi.

3. Mishra, Manisha. *Protein phosphorylation in developing rat brain during hypomyelination: A functional study with special relevance to role of synapsin.* BHU. Prof. Raj Shankar, Department of Biochemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

4. Shah, Vanya. *Role of histone H 1 in the structure of rat liver chromatin.* BHU. Dr. Z. Ali, Department of Biochemistry, Banaras Hindu University, Varanasi.

5. Srivastava, Anita. *A biochemical studies on endogenous depression.* BHU. Prof. S.S. Dubey, Department of Biochemistry, Banaras Hindu University, Varanasi and Dr. M.N. Singh, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

6. Srivastava, Arti. *Heavy metal induced biochemical changes in rats.* BHU. Dr. G.R.K. Rao, Department of Biochemistry, Banaras Hindu University, Varanasi and Dr. J.P.N. Chansuria, Department of Biochemistry, Banaras Hindu University, Varanasi.

7. Tiwari, Neerja. *Plasmids in gram negative bacteria.* BHU. Dr. G.R.K. Rao, Department of Biochemistry, Banaras Hindu University, Varanasi and Prof. P.C. Sen, Department of Biochemistry, Banaras Hindu University, Varanasi.

Medical Sciences

1. Anshu. *Nutrition supplement mental functions.* BHU. Prof. D.K. Agrawal, Department of Paediatrics, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

2. Gopalji. *Sadharma pundrik ka ayurvedic evam sahityik parisheelan.* BHU. Prof. D. Ojha, Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi and Dr. R. Dwivedi, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

3. Pande, Amita. *Iron deficiency neurotransmitters.* BHU. Prof. K.N. Agrawal, Department of Paediatrics, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

4. Parekh, Umesh. *Synthesis of penamates and their screening for pharmacological activities.* Devi Ahilya. Dr. S.C. Chaturvedi, Head, College of Pharmacy, Shri G.S. Institute of Technology and Science, Indore.

5. Pathak, Bhavna. *Studies on asrigdra.* BHU. Prof. (Miss) P.V. Tewari, Department of Prasuti Tantra, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

6. Pillai, P. Gopaia. *A clinical study of sexual dysfunctions.* Kerala. Dr. K.A. Kumar, Prof., Department of Psychiatry, Medical College, Trivandrum.

7. Singh, Lakshman. *Hormonal response to poorvakarma in management of cancer.* BHU. Prof. G.C. Prasad, Department of Shalya Shalakya, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

8. Sunita. *Studies on cultural and literary aspects of sushruta.* BHU. Dr. K.R. Sharma, Department of Shalya Shalakya, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

9. Swamy, Tirunagari Yadagiri. *Kaumarbhritya in Medieval India.* BHU. Dr. Romesh Sharma, Department of Prasuti Tantra, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

10. Trivedi, Piyush. *Synthesis and biological evaluation of some mannich bases.* Devi Ahilya. Dr. S.C. Chaturvedi, Head, Department of Pharmacy, Devi Ahilya Vishwavidyalaya, Indore.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Bandyopadhyay, Nandadulal. *Studies on some mappings in topological spaces.* Burdwan. Dr. Chhanda Banerjee, Reader, Department of Mathematics, University of Burdwan, Burdwan.

2. Dutta, Tapan Kumar. *Generalised derivatives and integrals with applications to trigonometric series.* Burdwan. Dr. Satyanarayan Mukhopadhyay, Prof., Department of Mathematics, University of Burdwan, Burdwan.

3. Mitra, Ranjit Kumar. *Some contributions to design and analysis of experiments.* Burdwan. Prof. S.B. Choudhuri, Department of Statistics, University of Burdwan, Burdwan and Dr. G.M. Saha, Assoc. Prof., Department of Statistics, Indian Statistical Institute, Calcutta.

4. Narayanasamy, P. *Multiplex and dual multiplex algorithms for*

solving LP problems using data structure concepts. Anna.

5. Sridharan, V. *Multi-phase approach to population models and applications.* IIT Madras.

6. Sudharsan, R. *Certain problems in imperfect fluid cosmology.* IIT Madras.

Statistics

1. Bandyopadhyay, Uttam. *Sequential type non parametric tests.* Calcutta.

2. Dasgupta, Utpalkumar. *Some contributions to the study of production functions.* Calcutta.

3. Krishan Kumar. Some additional space queueing systems with cost analysis. Kurukshetra.

Physics

1. Devashrayee, Niranjan Maneklal. *Development and characterization of AlSi, Ti/AlSi layered structure and $TiSi_2$ thin films for VLSI interconnect metallization.* Kurukshetra.

2. Gurmej Singh. *Some studies on the solid films of bismuth germanium.* Punjabi. Dr. C.S. Khurana, Prof., Department of Physics, Punjabi University, Patiala.

3. Manohar, P. *Studies in photoproduction of charged pions from complex nuclei using distorted wave impulse approximation.* Anna.

4. Sen, Harabhusan. *Experimental and theoretical studies on some rare earth (RE) ions in RE-orthophosphates, RE-aluminium orthoborates and other single crystals.* Burdwan. Prof. Dhiraj Neogi, Department of Physics, University of Burdwan, Burdwan.

5. Seshadri, A.T. *Ultrasonic and dielectric studies of some organic liquids.* IIT Madras.

Chemistry

1. Audisesha Reddy, K. *Synthetic investigation on heat resistant heteroaromatic polymers.* IIT Madras.

2. Bhavani, G. *Claisen rearrangements in amino-1,3,5-triazines.* IIT Madras.

3. Bhavsar, S.B. *Studies on synthetic drugs.* Saurashtra. Dr. A.R. Parikh, Department of Chemistry, Saurashtra University, Rajkot.

4. Chandrasekhar, B. *Syntheses and reactions of new types of fused-ring heterocycles containing oxygen, nitrogen and sulphur atoms.* IIT Madras.

5. Gayathri, V. *Complexes of cobalt, rhodium and iridium with some nitrogen heterocycles and their catalytic activity.* Bangalore. Dr. N.M. Nanje Gowda, Department of Chemistry, Central College, Bangalore University, Bangalore.

6. Iyer, E.M. *Evaluation of biochemical cost of tolerance to heat stress.* Bangalore. Dr. G.D. Kalyankar, 202/8, Devdaya Nagar, Pokharan Road, 1, Thane West, Maharashtra.

7. Jayakumar, R. *Conformational studies of acyclic peptides by NMR and single crystal X-ray diffraction techniques.* IIT Madras.

8. Jeyalakshmi, R. *Catalytic activity of rare earth-transition metal oxides with K_2NiF_4 structure.* Anna.

9. Keshava Rao, R. *Steroidal transformations.* Osmania.

10. Kondala Rao, N. *An EMF study of the activity coefficients of aqueous electrolyte mixtures.* Osmania.

11. Krishnan Namboothiri, K. *Separation and determination of trace amounts of thallium and lead.* IIT Madras.

12. Kumar, V. *Some studies on the chemistry of selenium and tellurium.* IIT Madras.

13. Lakshmi, T. *Experimental and theoretical studies on the surface properties of catalysts in SMSI state.* IIT Madras.

14. Lavanya, K. *Analytical studies on some drugs of forensic and pharmaceutical interest.* Osmania.

15. Mathew, Jainamma. *A study of the polymerization and copolymers of 2-hydroxyethyl methacrylate.* IIT Madras.

16. Mohan, T. *Studies on the reactions of cyclothiazines with unsymmetrical phosphines and phosphinimines.* IIT Madras.

17. Natarajan, S. *Superconductivity studies on ternary systems of compounds.* IIT Madras.

18. Parmeswaran, V.R. *Studies on polymer anchored and water soluble complexes of rhodium (I) as hydrogenation catalysts.* IIT Madras.

19. Patolia, V.N. *Studies on natural and synthetic drugs.* Saurashtra. Dr. A.J. Baxi, Department of Chemistry, Saurashtra University, Rajkot.

20. Prem Chandran, R.S. *Characterization of strong metal support interaction in rare earth oxide supported nickel catalysts.* IIT Madras.

21. Raj, Dilipkumar Somabhai. *Studies on metal chelates of some quadridentate schiff bases.* Patel. Dr. J.R. Shah, Prof., Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

22. Rajendran, G. *Preferential solvation of some silver (I) and copper (II) salts in binary solvent mixtures.* IIT Madras.

23. Ramakrishnan, Geetha. *EPR and single crystal structural investigations on some transition metal complexes.* IIT Madras.

24. Ramesh Babu, B. *Studies on the synthesis of polyhetero polycyclic ring systems.* IIT Madras.

25. Ray, Mahadeb. *Studies on molecular complexes of substituted phthalimides on some general aspects of charge-transfer complexes.* Burdwan. Dr. Bijay Kumar Seal, Prof., Department of Chemistry, University of Burdwan, Burdwan.

26. Rufus, I. Bernard. *Photoelectrochemical photocatalytic and surface studies on metallized cadmium chalcogenides.* IIT Madras.

27. Satyanarayana Murty, Mangena Venkata. *Studies on fermentation of major hemicellulosic components, xylan and xylose by anaerobic bacteria.* IIT Madras.

28. Selvanathan, A. *Physico-chemical studies on methanol synthesis catalysts.* IIT Madras.

29. Soundar, S. *Studies on cellulose biodegradation.* IIT Madras.

30. Srinivas, B. *Studies on the effect of gamma radiation on the physico-chemical properties of perovskite type catalysts and its role in catalysis.* IIT Madras.

31. Subhashini, M. *Isotopic exchange between chloramine-B and radioactive chloride ion and application of radiochloramine-B for drug analysis.* IIT Madras.

32. Sumita Rao, N. *Carbonylation of saturated and unsaturated compounds catalysed by ruthenium complexes.* Durgawati. Prof. M.M. Taqui Khan, Director, Central Salt and Marine Chemicals Research Institute, Bhavnagar and Dr. D.D. Mishra, Prof. and Head, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur.

33. Sundararajan, R. *Studies on the physico-chemical and catalytic properties of some transition metal oxide spinels.* IIT Madras.

34. Thomas, K.A. *Solid state studies on high Tc superconductors and phases with NZP structure.* IIT Madras.

35. Vasudevan, D. *Electrochemical reduction of some naphthylhydrazones in amphiprotic and aprotic media.* IIT Madras.

36. Vasumathi, N. *Studies in organosulphur chemistry: Investigations concerning the reactivity of beta-mercaptopropionic acid towards carbonyl compounds.* IIT Madras.

37. Velayutham, G. *Electrochemical dissolution of nickel in concentrated electrolyte solutions.* IIT Madras.

38. Vijaya Ragavan, Visalakshi. *Coherence transfer in high resolution nuclear magnetic resonance.* IIT Madras.

Earth Sciences

1. Bajpai, Sunil. *Geology and palaeontology of some late cretaceous and middle eocene sequences of Kachchh, Gujarat, Western India.* Panjab.

2. Misra, Debendra Kumar. *Clay mineralogy and geochemistry of the Chilka Lake sediments, East Coast of India.* Andhra.

3. Siva Rama Krishna, Surireddi Satya Venkata. *Some numerical modelling experiments of tropical cyclone circulation using Arakwa Schubert cumulus parametrisation.* Andhra.

4. Srinivasa Reddy, G.S. *The geochemistry and petrogenesis of the granitic rocks around Sakarsanahalli area, Kolar District, Karnataka, South India.* Bangalore. Dr. B. Mahabaleswar.

5. Vidyanath, D. *Impact of intensive irrigation on the ground-water quality in parts of Osmansagar catchment, Ranga Reddy District, A.P. India.* Osmania.

Engineering & Technology

1. Appukuttan, K.K. *Pole assignment in linear multivariable systems using output feedback.* IIT Madras.

2. Ashok Kumar. *Behaviour of steel fibrous concrete beam-column connections subjected to simulated earth quake load reversal.* Panjab.

3. Babu Rao, Kalpala. *Modelling and simulation of natural gas pipeline networks.* IIT Madras.

4. Dhandapani, S. *Experimental and theoretical investigations on a single cylinder, 4-stroke lean burn S.I. Engine.* IIT Madras.

5. Joseph, K. Paul. *Electrical and optical characterization of erythrocyte suspensions.* IIT Madras.

6. Kamaraj, M. *Some studies on creep and creep crack growth behaviour of austenitic stainless steel and their weldments.* IIT Madras.

7. Lakshmanan, Muthukrishnanaidu. *Evaluation of hazard index in ferrous foundries: A new methodology.* IIT Madras.

8. Mariadassou, Joseph Chakravarti P. *Solutions to some I(ii)-posed problems in sensor array imaging.* IIT Madras.

9. Mukhopadhyay, Madhusudan. *Control of diesel locomotive fleet in a steel plant.* Burdwan. Prof. Dilip Kumar Pal, Department of Mechanical Engineering, Regional Engineering College, Durgapur.

10. Nakkerran, P.R. *A study on the role played by regulating wheel in centreless grinding.* IIT Madras.

11. Nandakumar, K. *Fluid mechanical and combustion aspects of interference effects in simulated droplet combustion systems.* IIT Madras.

12. Pasumarthy, Seshu. *Some studies on the dynamics of composite bladed disks.* IIT Madras.

13. Paul, Jobi V. *Optimization of multipurpose multireservoir systems.* IIT Madras.

14. Rajanna, A. Venkata. *Development of reinforced reaction injection moulding process for glass acrylic composites.* IIT Madras.

15. Ramachandra, L.S. *Some studies on axisymmetric bimodulus plates and shells.* IIT Madras.

16. Ramachandran, G. *Sequential analysis of chest wall displacements due to cardiac action by image and signal processing.* IIT Madras.

17. Ramani, N. *Design and development of an asymmetric and variable exhaust port timing control in a two-stroke S I engine.* IIT Madras.

18. Ramesh, A. *Investigations on the design and performance of two types of hot surface ignition engines.* IIT Madras.

19. Ramesh, Avula Tulasi Venkata. *Computerized analysis of erythrocyte distribution in capillaries and their morphological changes.* IIT Madras.

20. Sakr, Mohamed Al-Gharieb Megahed. *Experimental studies of pile load transfer in clays using model piles.* IIT Madras.

21. Sankaranarayanasamy, K. *Optimization of gear shaping cutter geometry and process analysis.* IIT Madras.

22. Sobhan, C.B. *Free convection studies on horizontal fins and fin arrays via differential interferometry.* IIT Madras.

23. Sriram, P. *Studies on solidification, structure and properties of cast zinc-aluminium alloys.* IIT Madras.

24. Srinivasan, G. *Algorithms for grouping and layout in cellular manufacturing systems.* IIT Madras.

25. Sundararajan, T. *Analytical and numerical studies on operation of pumping and recharging well fields.* IIT Madras.

26. Thamizharasan, V. *Demand modelling for intercity travel by public transport modes.* IIT Madras.

27. Thangaratnam, R. Kari. *Thermal bucking of laminated composite plates and shells.* IIT Madras.

28. Thyagarajan, K.V. *Studies on fibre reinforced plastic wheels.* IIT Madras.

29. Udupa, K. Manjunatha. *Some investigations on vibration, structural tailoring and aeroelastic stability of helicopter rotor blades.* IIT Madras.

30. Vasudevan, S. *Multiobjective planning and optimization in water resources systems.* IIT Madras.

31. Venkateswarlu, T. *Realization of multidimensional digital filters.* IIT Madras.

32. Verghese, T. Zacharia. *Analytical and experimental investigation on the inelastic behaviour of concrete framed structures.* IIT Madras.

SCHOOL OF PLANNING AND ARCHITECTURE: NEW DELHI

(Deemed to be a University under section 3 of UGC Act)

4, Block-B, I.P. Estate, New Delhi-110 002.

SPECIAL RECRUITMENT DRIVE FOR SC/ST CANDIDATES

Applications are invited from Indian Nationals for the following positions of Lecturers, in the pay-scale of Rs. 2200-75-2800-100-4000, in the Departments of Studies in the School, so as to reach the Registrar on or before **26th November, 1990.**

S.No.	Name of the Department	No. of Post reserved for SC	No. of Post reserved for ST
1.	Lecturer in Architecture	2	1
2.	Lecturer in Urban Design	1	—
3.	Lecturer in Urban/Regional Planning	1	1
4.	Lecturer in Transport Planning	1	—
5.	Lecturer in Landscape Architecture	1	—
6.	Lecturer in Housing	1	—

AGE LIMIT: Below 35 years (relaxable upto 5 years for SC/ST Candidates) (As on 1.12.1990).

The posts carry usual allowances as per Central Government Rules.

Consultancy Practice Rules are under revision. Appointees may be permitted consultancy practice on application of the Revised Rules of Consultancy Practice.

The posts carry benefits of G.P. Fund-cum-Pension-cum-Gratuity and Central Government Health Scheme.

Candidates from outside Delhi called for interview will be paid second class rail fare for both journeys (within India), by the shortest route.

Prescribed application form and other details regarding qualifications and experience etc. can be obtained free of cost from the Office Registrar, either personally or on written request accompanied by a self-addressed envelope of size 25 cm x 12 cm indicating the name of post which the applicant desires to apply for.

Indian candidates abroad may apply on plain paper indicating their qualifications, age, experience etc. It shall be open to the school to consider the names of suitable SC/ST candidates who may not have applied.

Separate application form should be filled in for each post. Applicants who are in the employment of Government/Semi Government Organisations or of any Government Undertaking must send their applications through proper channel.

REGISTRAR

PUNJABI UNIVERSITY PATIALA

Advt. No. 76/PRO/Rect/90.

Applications on the prescribed form are invited for the post of Dean, College Development Council so as to reach the Deputy Registrar (Establishment) by **31.10.90.**

Grade: Rs. 4500-7300 (UGC).

Qualifications

An eminent scholar with published work of high quality and actively engaged in research. About ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Note:

1. This post is a tenure post for a term of 3 years extendable for another term of 3 years but in no case beyond the age of 65 years of the appointee.
2. Candidates must possess working knowledge of Punjabi.
3. Incomplete applications will not be entertained.
4. It is not obligatory on the part of the University to call every eligible candidate for interview.

APPLICATION FORMS can be obtained from the Head, University Publication Bureau, on payment of Rs. 15/- at the counter or by sending an IPO for Rs. 15/- in favour of the Registrar alongwith a self-addressed envelope (25 x 10 cms) affixed with postage stamps worth Rs. 7/- and indicating on it the name of the post applied for.

REGISTRAR

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20. Constitutional Law	35.00
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23. रसायन शास्त्र (Chemistry)	160.00
24. इतिहास (History)	70.00

Post Graduate Level

25. Mathematics	85.00

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Address Enquiries to:

Under Secretary (Publications)

ASSOCIATION OF INDIAN UNIVERSITIES
AIU House, 16 Kotla Marg, New Delhi-110002

Telephones: 3310059, 3312305, 3313390 & 3312429

Telex: 31-66180 AIU IN

GRAM: ASINDU

THE UNIVERSITY OF BURDWAN

RAJBATI: BURDWAN
WEST BENGAL.

Advertisement No. 5/90-91
Dated: September 12, 1990

Applications in the prescribed form are invited for the following posts:

(A) Inspector of Colleges: One post
(B) Secretary of a Faculty Council for Post Graduate Studies in Science: One post
(C) Deputy Librarian: One post (Lien bound but likely to be permanent.
(D) Development Officer: One post
(E) Audit & Accounts Officer: One post
(F) Estate Officer: One post

Scales of Pay:

For "A": Rs. 4500-150-5700-200-7300/-
For "B", "C", "D" & "E":
Rs. 3700-125-4950-150-5700/-
For "F": Rs. 2200-75-2800-100-4000/-.

The post carries dearness and other admissible allowances according to the University Rules.

EDUCATIONAL QUALIFICATIONS & EXPERIENCE:

For the post indicated at "A":

(a) Essential:

(i) Uniformly good academic record with a B+Master's Degree or its equivalent.
(ii) At least 15 years' experience in Academic Institution like University or in an Institute of higher learning of which 5 years must be in high level administration in a University or in an Institute of Post-graduate Study.
(iii) Age not less than 40 years. Relaxable in the case of exceptionally qualified candidates.

(b) Desirable:

(i) A Doctorate Degree or published research work of merit;

Or

(ii) High level administrative experience in a Government or Quasi-Government organisation or a good background in administration and management in senior position.
(iii) Essential to have experience in administration of colleges desirably in a position not less than that of a Principal of a College.

For the post indicated at "B":

(a) Essential:

(i) Uniformly good academic record with a B+Master's Degree or its equivalent.
(ii) At least 10 years' experience in a position involving supervision, control and planning of Examinations, administration of Colleges or in an Institute of Higher learning or Government or other academic bodies. At least 5 years of the 10 years' experience should be in higher position of high level administration.
(iii) Age not less than
Relaxable in case of
qualified candidates.

(b) Desirable:

(i) A Doctorate Degree published paper of high standard.

Or

(ii) Experience of at least 10 years in a fairly senior position in any academic Institution like a College or a University or a research organisation.

For the post indicated at "C":

(a) Essential:

(i) Uniformly good academic record with a B+Master's Degree in Library Science or a B+Master's Degree followed by a Bachelor's Degree in Library Science.
(ii) At least 10 years' experience in working in senior position like Assistant Librarian in a Library of repute, preferably in a University or in an Institute of Higher Learning.
(iii) Age not below 35 years. Relaxable in the case of exceptionally qualified candidates.

(b) Desirable:

(i) A Doctorate Degree or published research work of merit.
(ii) Knowledge of foreign language.

For the post indicated at "D":

(a) Essential:

(i) Uniformly good academic record with a B+Master's Degree.
(ii) At least 10 years' experience in a position involving supervision, control and planning of administration of Colleges, University/Institute of Higher Learning or Government or Quasi-Government organisation.
(iii) Age not below 35 years. Relaxable in the case of exceptionally qualified candidates.

(b) Desirable:

(i) A Doctorate Degree or published work of high standard.
(ii) Experience of at least 7 years in University or in Post-graduate Research Organisation as Assistant Registrar or equivalent post. In that case, records of performance will be examined.

For the post indicated at "E":

(a) Essential:

(i) Uniformly good academic record with a B+Master's Degree.
(ii) Experience in Audit and accounts work for at least 7 years in senior position involving supervision, control and planning and management of Audit and Accounts.
(iii) Master's Degree in Commerce/Business Management will be given preference.
(iv) Age not less than 35 years. Relaxable in the case of exceptionally candidates.

(b) Desirable:

Membership of the Institute of Cost Accountants and Chartered Accountants of India. The requirement of Master Degree will be waived in case of such candidates.

For the post indicated at "F":

(a) Essential:

(i) A Degree in Law or Management.
(ii) At least 5 years' experience in dealing with matters for upkeeping of an estate including Management of properties, control of personnel and the like.
(iii) Age not below 30 years. Relaxable in the case of exceptionally qualified candidates.

(b) Desirable:

(i) Experience in gardening/landscaping or experience in inventory control or as legal consultant to a large scale industrial concern.

Prescribed application forms may be obtained from the Office of the Registrar, University of Burdwan personally on payment of Rs. 10/- in cash at the University Sales Counter from 11 a.m. to 12 Noon on Saturdays and 11 a.m. to 1.30 p.m. on other working days or by sending a self-addressed stamped (Re. 1/-) envelope (11" x 5") accompanied by Crossed Postal Order of Rs. 10/- in favour of the Finance Officer, University of Burdwan.

Last date for submission of application with requisite fee of Rs. 5/- is **November 20, 1990.**

M.K. Chatterjee
REGISTRAR

REGIONAL ENGINEERING COLLEGE

ROURKELA-769 008 (ORISSA).

Advertisement No. 2/90
Dated: 5th October, 1990.

Applications in prescribed form are invited for the following Faculty positions:

I. **PROFESSOR:** Scale Rs. 4500-150-5700-200-7300/- (Plus State Government Dearness Allowance).

Computer Science, Engineering and Application (Management).

II. **ASSISTANT PROFESSORS:**

Scale Rs. 3700-125-4950-150-5700/- (Plus State Government Dearness Allowance).

Applied Electronics and Instrumentation Engineering (Instrumentation);

Computer Science, Engineering and Application (Computer Science/Computer Engineering/Computer Application); Chemical Engineering (Process Dynamics, Control and Instrumentation/Reaction Engineering/Fluid and Particle Mechanics/Transfer Processes); Electrical Engineering (Control System/Signal Processing and Communication/Power Electronics); Chemistry (Physical/Inorganic/Organic); Mathematics (Any Branch).

III. **LECTURERS:** Scale Rs. 2200-75-2800-100-4000/- (Plus State Government Dearness Allowance).

Applied Electronics and Instrumentation Engineering (Electronics/Instrumentation); Chemical Engineering; Electrical Engineering; Mechanical Engineering (Any specialisation in corresponding disciplines); Computer Science, Engineering and Applications; (Computer Science/Computer Engineering/Computer Applications).

IV. **CHIEF PROJECT LEADER:**

School of Entrepreneurship & Management Sciences (Purely Temporary against Plan Scheme).

Scale Rs. 4500-150-5700-200-7300/- (Plus State Govt. Dearness Allowances).

QUALIFICATIONS & EXPERIENCE:

A.I.C.T.E. norms of qualification and experience as of University level Post Graduate Engineering College Standard. Preference will be given to SC/ST/Physically Handicapped candidates who are otherwise considered qualified. Candidates abroad may apply on plain paper giving full bio-data.

Total monthly emoluments at the starting point as at present rate are: Professors: Rs. 5830.00; Assistant Professors: Rs. 5030.00; Lecturers: Rs. 3038.00.

Chief Project Leader: (Entrepreneurship Development Programme)

Essential:

Ph.D. with 1st Class degree at Bachelors' or Masters level in Engg. & Technology or a Post Graduate in any branch of Science, Applied Mathematics or Business Administration. Atleast 10 years experience in industries/industrial promotion/industrial consultancy/entrepreneurship development of which atleast 5 years should be in a responsible (Supervisory/Managerial) capacity equivalent to an Assistant Professor.

Desirable:

Post Graduate degree in Management or AICWA; Entrepreneurship Trainer's Certificate. Experience in industrial project planning and execution.

Total monthly emoluments at the starting point is Rs. 5830/-.

Further details regarding qualifications, experience, specialisations, service conditions etc. prescribed for the posts and application forms will be available from the undersigned on payment of Rs. 15/- in shape of crossed Bank Draft payable to "Principal, Regional Engineering College, Rourkela-769 008", at the State Bank of India, R.E. College Campus Branch enclosing a self-addressed envelope 23 cmx10 cm in size, with postage stamp worth Rs. 2.00. Separate applications should be made if candidates apply for more than one post. The last date of receiving completed applications is **5th November, 1990.**

REGISTRAR

THE UNIVERSITY OF BURDWAN

RAJBATI: BURDWAN
WEST BENGAL.

Advertisement No. 6/90-91
Dated: September 24, 1990

Applications in prescribed form are invited for the following posts in the approved UGC scales of pay.

(A) Professorship in Chemistry: One post
(B) Professorship in Law: One post
(C) Readership in Political Science: One post
(D) Lectureship in Political Science: One post
(E) Lectureship in Law: One post (Lien bound but likely to be permanent)
(F) Lectureship in Sanskrit: One post
(G) Part-time Lectureship in Law: Two posts
(H) Part-time Lectureship in Sanskrit: Two posts
(I) Part-time Lectureship in Statistics: Four posts
(J) Part-time Lectureship in Sociology: One post
(K) Part-time Lectureship in Hindi: Three posts

Monthly Honorarium

For Part-time Lectureship: Rs. 150/- per month plus admissible conveyance allowances.

Minimum Qualifications:

As prescribed by the University Grants Commission.

SPECIALISATION OR PROFICIENCY

For the posts indicated at "B", "C", "D", "E", "G", "J" & "K":
Any branch of the subject.
For the post indicated at "A":
Organic Chemistry/Inorganic Chemistry/Physical Chemistry/Nuclear and Analytical Chemistry.
For the post indicated at "F":
Indian Epigraphy.
For the post indicated at "H":
Literature/Indian Phil./Vedic Studies/Epigraphy.
For the post indicated at "I":
Liner models & Econometrics/Design of Experiments/Computer Programming/Demography/Stochastic Process/Non-parametric methods.

Prescribed application forms may be obtained from Rajbati, University of Burdwan personally on payment of Rs. 10/- in cash at the University Sales Counter from 11 A..M. to 12 Noon on Saturdays and 11 a.m. to 1.30 p.m. on other working days or by sending a self-addressed stamped (Rs. 2/-) envelope (11"x9") accompained by Crossed Indian Postal Order of Rs. 10/- in favour of the Finance Officer, University of Burdwan.

Last date for submission of application with requisite fee of Rs. 5/- is **November 20, 1990.**

M.K. Chatterjee
REGISTRAR

BANASTHALI VIDYAPITH
(Institution Deemed to be University)

WANTED: Lecturers (Foundation Courses): 2

Qualifications: Good academic record with at least second class (C in the seven point scale) Masters Degree in Sociology/History/Political Science/Philosophy for teaching one or more of the following subjects INDIAN HERITAGE; WOMEN IN INDIAN SOCIETY; RELIGION, SCIENCE & SOCIETY; WORLD TODAY.

Pay Scale: Rs. 2200-75-2800-100-4000 (Initial emoluments Rs. 3036/-), D.A., P.F., Gratuity etc. as per Vidyapith Rules.

Notes: (1) Teachers must become habitual wearer of KHADI on appointment. (2) All other things being equal women candidates preferred. (3) Interview at own expenses.

Applications on plain paper giving complete details of qualifications and experience with attested copies of Marklists of all the examinations (and papers of Post-graduation) should reach The Secretary, Banasthali Vidyapith, P.O. Banasthali Vidyapith (Rajasthan) 304 022 **within 15 days** of the publication No. 10/90.

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University News

MONDAY, OCTOBER 29, 1990 Rs. 2.50

UNIT
NOV 1990
C.I.I.L. MYSORE

Hon'ble Shri Chimanbhai Mehta, Union Minister for Human Resource Development, addressing the 70th anniversary celebrations and 39th Convocation of the Gujarat Vidyapith. Prof. Ramlal Parikh, Vice-Chancellor, and Prof. Karsandas Soneri, Education Minister, Gujarat State are seated on the dais.

GURU GHASIDAS UNIVERSITY, BILASPUR, MP

No. 3780/Estt/UTD/90-91

Dated 16.10.90

LAST DATE: 30.11.1990

Applications on the prescribed Form (in seven copies) are invited from eligible candidates for the following posts in the University Teaching Departments so as to reach the undersigned on or before 30.11.1990.

Sl.No.	Name of the Post	Subject	No. of Post	Pay Scale
(1)	Professor	Hindi	1	Rs. 4500-7300/-
		Forestry	1	
		English	1	
		Library Science	1	
		Criminology	1	
		Pharmacy	1	
(2)	Reader	Hindi	1	Rs. 3700-5700/-
		English	1	
		Criminology	1	
		Computer Science	1	
(3)	Lecturer	English	1	Rs. 2200-4000/-
		Library Science	1	
		Criminology	1	
		Pharmacy	1	

Qualifications

Professor

An eminent outstanding scholar with Doctorate in the subject having secured at least 55% at the Post-Graduate Examination and at least 50% marks in Graduate Examination with the subject applied for, from a recognised University with published work of high standard and should be actively engaged in research in the subject. Should possess at least ten years experience of teaching the subject of which five years should be as Reader or in an equivalent position together with experience of guiding research at Doctoral level.

Reader

(1) Master's Degree in the subject with atleast 55% Marks and with atleast 50% Marks in Graduate Examination with the subject applied for from a recognised University.

(2) A Doctoral Degree/M.Phil in the subject.

(3) Five years experience of teaching UG/PG Classes having atleast three years to these as University Lecturer or in an equivalent position.

Lecturer

(1) Master's Degree in the subject with atleast 55% Marks together with atleast 50% Marks in Graduate Examination with the subject applied for from a recognised University.

(2) A Doctoral Degree/M.Phil in the subject.

Application forms can be obtained from the University Office on payment of Rs. 10.00 or by making a written request by post to the Registrar, accompanied by a crossed postal order of Rs. 20.00 drawn in favour of the 'Registrar, Guru Ghasidas University, Bilaspur' with self-addressed envelope (10″ × 5″).

Incomplete applications, applications not on the prescribed form, and applicants not having advertised qualifications will not be considered.

All appointments will normally be on two years probation. The age of superannuation, the allowances and benefits of pension, gratuity, provident fund will be admissible under the rules in force from time to time.

Applicants who are in employment in Government / Semi-Government / Organisation/Educational Institute or of any Govt. undertaking must send their application through proper channel, but advance copy should reach the University in time. No applicant shall be permitted to face the interview or shall be considered without 'No Objection Certificate' of the Department concerned.

No. T.A./D.A. will be admissible to the candidate if called for interview.

The Selection Committee may consider the case of any person in absentia. Only eligible candidates may be called for interview.

The University reserves the right to fill up or not to fill up any post advertised.

The candidates will have to produce the original documents relating to age, qualifications, experience, etc. at the time of interview.

Canvassing in any form by or on behalf of the candidate will disqualify him.

Working knowledge of Hindi will be desirable for all the posts.

Candidates who had applied for any of the posts with reference to earlier advertisement(s) **shall also apply afresh.** Candidates not eligible as per qualifications need not to apply.

REGISTRAR

Women's Studies Programmes and Women's Organisations

The Association of Indian Universities (AIU) is preparing a Directory of Women's Studies Programmes and Women's Organizations in India in collaboration with the Commonwealth of Learning (COL), Vancouver, Canada. The Association invites all such organizations working in any part of the country to get in touch with the Secretary at the following address for their inclusion in the proposed Directory:

The Secretary
Association of Indian Universities
AIU House
16 Kotla Marg
New Delhi 110 002

5 NOV 1990
C. P. T. R. I., MYSORE

UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

An Educational Review

'What May be Done?'

G.B.K. Hooja*

In presenting the perspective paper on Education entitled, 'Towards an Enlightened & Humane Society', the Ramamurti Committee has sought to focus attention on twenty six issues. It holds that an integrated and holistic view of education should be taken and the dichotomies, such as formal and non-formal, academic and vocational education should be avoided. In its opinion, the school should form the base of the educational pyramid, and as such, should serve as the main instrument for moving towards the goal of universalisation.

It underlines the principle of equitable opportunity for all as a path of educational development, in order to ensure an egalitarian social order by broadening the social and ethnic bias of education; and questions the segregated nurturing of talent amongst a few in separate schools. As such, it recommends the establishment of a Common School System over a ten-year time-frame.

The Committee underscores the use of mother-tongue as a means of facilitating learning, self-expression and promotion of the social identity of the child. Emphasising the importance of the integration of the hand, head and heart in the educational curriculum, it suggests that socially useful productive work (SUPW) should become an effective medium of learning. sensitization, and developing creativity and problem-solving skills. Thus, it suggests vocationalisation of secondary education with a vocational component built into the curriculum as an integral part, and the necessity of operational linkages between the World of School and the World of Work.

The Committee laments the universal fall in moral values, and would like educational to be informed by the basic values of democracy, secularism, socialism, scientific temper, equality of sexes, honesty, integrity, courage and justice.

It would like the school education to be freed from the strangle-hold of central planning; and local area planning to be introduced instead. To this end, the Committee recommends a cluster of educational institutions at different levels, from primary to tertiary, to come together to form Educational Complexes mutually interacting and pooling their material and intellectual resources.

It will be noticed that it embodies the gist of the most forward-looking recommendations of the several Committees and Commissions which have deliberated upon the question of Indian education since before Independence. As is known, there is no dearth of salutary recommendations, and our best minds have unequivocally laid before us WHAT is to be done. The million dollar questions are: HOW to do it; and WHO is to do it.

In answer to these questions, the Committee has suggested some modalities as follows:

First, it recommends the schools to be the principal vehicle for achieving universalization of education. It states that the school should perform not merely for those children who attend but also for those who remain out. To this end, it recommends adjusting the school timings to the convenience of the majority of children.

**Former Vice-Chancellor, Gurukul Kangri Vishwavidyalaya,*
A/15-A, Vijay Path, Tilak Nagar, Jaipur 302 004.

It also emphasises the importance of education for women's equality and removal of regional disparities. The steps proposed include schools being made nodal points for delivery of essential services by the various grassroot level government agencies extending services concerning nutrition, health, child care; raising proportion of women teachers; incentives in terms of scholarships, free supply of textbooks, uniforms; and development of area and gender specific programmes.

In this perspective, the Committee has brought under focus the desirability of generating a culture of respect for socially useful work and of productive labour, in the hope that this will facilitate, in turn, the development of not merely a more relevant knowledge base, but also creative intelligence, on which one may keep building throughout life.

May one suggest as a specific measure, in this context, that the entire force of teachers and student body, locked up in school/college buildings as it is at present, come out on the streets once a month, wearing shorts and carrying brooms and spades in their hands and sweep the neighbouring areas, to the lasting benefit of its neighbourhood as well as its own psychic growth. This is bound to have an electric, catalytic and lasting effect on all and sundry, young and old, men and women, in more ways than one.

Gandhiji presented the Spinning Wheels as an instrument of national transformation and self-reliance. Let us, for the next ten years, adopt the BROOM for the same purpose.

The Committee holds that the educational problem should be disaggregated, and area specific (even gender specific) targets should be set. Consistent with local area planning, the Committee recommends the formation of Educational Complexes working in coordination with Panchayati Raj institutions and local development and social welfare agencies, voluntary or governmental.

According to it, the University serving the region may affiliate itself with this complex and help in the process of educational development through its faculty, students and technical resources. These Educational Complexes are recommended to be placed under the umbrella of Panchayati Raj institutions/local bodies, in the long run.

It has next drawn attention to Examinations Reforms. In the words of the Committee, examinations have tended to corrode the educational system by distorting the very purpose of education. They are far too many, and highly expensive. What is needed is a process of modularisation and semesterisation and entrustment of the functions of evaluation to the teachers. Students should have the freedom of choice of modules rather than whole course packages. Provisions should be made for transfer of credits from one institution to another. Combined with the formula of delinking of jobs from degrees,, and holding of competence tests by employment agencies, this should have a salutary effect on the educational scenario.

The Committee is on good grounds in suggesting that Educational Complexes as contemplated by it, should come under the umbrella of Panchayati Raj institutions/local bodies. But why in the long run? Why not now? As is known, a Constitutional amendment to strengthen the Panchayati Raj Institutions is on the anvil and the Committee would do well to lend its weight to Panchayati Raj becoming universally operative as soon as possible.

It is time we entrusted Panchayati Raj institutions with substantial powers to run District/Village governments and thus initiated the process of Participatory Democracy. The introduction of Panchayati Raj certainly would emancipate the latent energy of the mass of people in its own service; and spurred by a relevant and dynamic educational system, in which scientific and technological forces are harnessed in appropriate measure, it may well be expected to bring about rapid changes at the grassroot level.

While the introduction of *Gram Swaraj*, as envisaged above, may be expected to generate a mass movement, it would still be necessary to develop elitist cadres of thinkers and social activists, both inside and outside the government, to provide leadership for this movement. Here the role of the Universities is apparent. At the same time, may one suggest the reconstitution of the Indian Educational Service (IES), at par with the IAS, IPS, IFS et cetera? Under the present dispensation, it has been noticed that educational portfolios being handled by the IAS officers not ony suffer from lack of continuity, but very often from lack of appreciation and commitment for the cause of education.

The British established the IES in 1864. This Service drew young graduates from Oxford and Cambridge, who came to India to man important educational positions such as the Directors of Public Instructions, Principals of Colleges and Vice-Chancellors of Universities. As is known, this Service had an immense impact on the Indian psyche, and in a large measure fulfilled the intentions of the Imperial rulers.

This Service was ended in 1924 on the introduction of the Montague-Chelmsford Reforms when with the transfer of the Educational portfolios to the Indian ministers, the stream of Ox-Bridge graduates opting for

India dried up.

The re-establishment of IES by attracting the cream of the universities at a young age may be expected to develop an all-India outlook, work ethos and environment, conducive to the pursuit of excellence which are the utmost felt needs of the various departments of life today.

An objection has been raised, and with good reason, that the IAS/IPS are elitist services, and therefore, do not nourish the egalitarian aims of a democratic society; the same objection would hold good for the IES as well. But it may be appreciated that for a well-ordered society it is necessary to have high-principled elitist leadership. The present day services tend to become snobbish because they are mostly urban-bourgeois based. The reason why we have failed to induct a larger segment of rural talent into the Services is that the rural areas lack the facilities for preparing the youth so as to be able to compete with the products of urban public school. This deficiency was sought to be removed by the introduction of the *Navodaya* schools. The Ramamurti Committee, however, does not appear to have appreciated the necessity of establishing such schools in the midst of rural Complexes. They would do well to reconsider their approach.

A prominent item which seems to have escaped the notice of the Ramamurti Committee is Sports. Our position in the world of sports needs much to be improved, and for this it would be necessary to identify young talent, more specifically in the rural areas; and if the *Navodaya* schools are well-equipped by way of coaching and physical facilities including scientific support systems, they could serve as basic units and spring-boards for the achievement of individual and national glory in competitive sports.

Having felt bewildered by the tragic and violent reaction to his declaration regarding the adoption of the Mandal Commission report the Prime Minister declared that these will not be applicable to the educational system. One may question that if special facilities are not to be made available for Backward Classes, how else are they going to be brought at par with the so-called Forward Classes? Brighter children amongst the Backward Classes should be identified at an early age and given all the facilities to earn merit to be able to stand in competition with the children of the privileged classes. Hence the need for *Navodaya* schools.

As regards higher education, may one venture to suggest that while education upto the 12th standard should be made compulsory for everybody, admission to the Degree courses at the Universities should not happen as a matter of course? While Higher Secondary education may be enumerated in the Fundamental Rights, University education should be available only to the highly talented and motivated youth and should provide the generating ground for leadership in various walks of life.

When we cast a glance at the socio-economic scenario across the board, it is obvious that the most Backward Class that exists in India as of 1990, is the Women-folk of our country. Women are the first educators of man and society. If they are well educated the future of the nation may be well-assured. The Committee has done right in emphasising the education and empowerment of women. It has further recommended that media programmes should be freed from tendencies conducive to gender bias, sex stereotyping and sex violence (particularly on Doordarshan).

It may be pointed out here that what the media lacks perhaps is not so much the will to fall in line with these noble aims, but the software. It is, therefore, of utmost importance that schools and institutions of higher learning should organise facilities for the development of Performing Arts. This would, in turn, encourage development of adequate software conducive to the growth of a scientific, composite and constructive culture, which could be utilised by the media.

At the same time the Committee may, logically, recommended that 25% of jobs in the government and public sectors may be reserved for women regardless of caste or community. This should prove a revolutionary factor in transforming the status of women and may at the same time save the nation from the disaster of caste-induced division, which has already cost the nation hundreds of precious young lives.

Last, but not the least, a vigorous programme for Teachers' orientation must be launched; for, in the final analysis, teachers form the delivery line of the system. Following the acceptance of the importance of this measure by the 1986 National Policy on Education, Academic Staff Colleges have been opened in 50 odd universities in the country. But for want of adequately aware resource-persons and instructors duly conscious of the necessity of imparting value-based education and development of a mosaic and scientific culture, the design of instruction at these colleges remains restricted to the old system of subject input and revision.

To inculcate this attitude, we need a vast network of orientation schools, short courses, full assistance of the media and the Performing Arts, libraries and reading rooms; and of course, competent men behind them. Bold, definitive, well-orchestrated and adequately supported schemes shall have to be devised to reach the high peaks of achievement needed to create a better quality of life for the vast mass of humanity inhabitating this land.

Need for Restructuring Teacher Appraisal

(Mrs) P. Rebeiro*

National Education Policy (NEP) and Mehrohtra Committee Report had rightly envisaged continuous teacher performance evaluation with a view to providing data for corrective measures or implementation of new schemes to enhance educational objectives. At the time of implementation of the programme of evaluation, serious inadequacies were observed as no clear guidelines were given by both the reports. The spirit with which the evaluation was to be performed embroiled in unwanted controversies. The authorities on the one hand attempted to use the scheme to 'enforce discipline' by turning the same as an evaluation of observance of Code of Conduct, and teachers' organizations reacted by undermining the programme whose function they saw as "controlling mechanisms". The result of the long beleaguered bargaining was the questionnaire now available in most universities implementing new pay-scales.

I wish in this note, after a brief analysis of the existing appraisal system, to suggest a comprehensive programme of teacher evaluation with an adequate feedback system that will help to improve the results of higher education objectives.

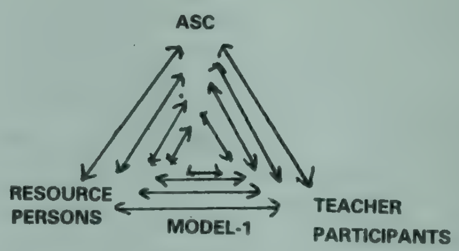
The Prevailing System

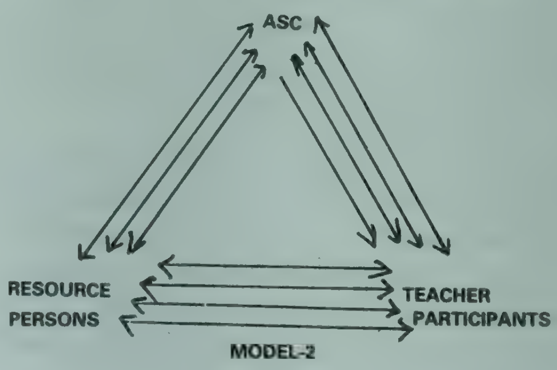
The University Grants Commission has two modes of evaluation of a teacher: (i) A general yearly self-appraisal, and (ii) the self-appraisal when a teacher attends orientation/refresher courses at Academic Staff Colleges. or some recognised institutes of advanced learning. The proformas supplied are nearly the same in both the cases. The former remain with the concerned universities and the latter are sent to UGC for analysis. The results of the second appraisal (if the data has been analysed) are not yet known to the public.

The basic aim of evaluation should be the improvement of the individual at the level of his/her performance. The teacher performance should never be viewed compartmentally in terms of performance in class or at research level or at the level of social commitment. In other words, teacher evaluation should be such that one has to take into account the varied factors responsible for his/her well being, physical, mental and moral.

The present system of evaluation (if it is claimed to function at all) seems to be concerned with matters of satisfaction of 'authorities'. The questions framed and the answers expected are data to satisfy or dissatisfy the Principal/Director/Vice-Chancellor as the case may be. Student satisfaction may also be implicitly seen in the evaluation, in the sense that the teacher is expected to 'go beyond his outlined time-table' to help the weak or needy students. Teacher evaluation concerned with teacher satisfaction is neither explicit nor implicit in the entire present scheme of evaluation.

In short, the present evaluation is designed to either control the teachers to the satisfaction of authorities, or create a mechanism whereby teachers can be given additional financial benefits. The refresher courses envisaged, seminars and workshops conducted, leave granted under Faculty Improvement Programme (FIP) etc., all tend to be viewed with the above objectives. The major consequence of this is the indifferent attitude that we observe of the teacher participants attending the above-mentioned programmes. The programmes organizers too are influenced by the above misconceptions when they tend to take such programmes as 'burden' and 'an infiltration in their leisure time'. The speakers/lecturers for these programmes too are influenced by this original malady and take their tasks very lightly. And in a system in which each segment influences the other, and in turn gets influenced and forms new attitudes which again start a new process of mutual reactions the academic objectives suffer, if not altogether ignored. The scene can best be interpreted in the following:





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* *Academic Staff College, Goa University, Bambolim-Goa.*

The two models express contrasting performance of the same system under two different presuppositions of teacher-appraisal. Model 1 is a necessary consequence of authority-oriented appraisal-system wherein there is contraction of knowledge due to adverse, continuous mutual influences between teacher, Academic Staff Colleges, instructors and authorities. Model 2 expresses how the mutual interactions would lead to expansion of knowledge, based on the same mutual interactions, in the absence of an appraisal based on the authority.

Is the above a realistic picture of our present educational system? Are teachers going to be responsive in an appraisal system not linked up with authority? What has been the response of teaching community before such an appraisal system came into existence? What has been the attitude of teacher organizations in this regard? For one, except for FIP and some Summer Institutes, there were no programmes oriented toward personal academic advancement. And the discretion to recommend the participants was left solely in the hands of authorities whereby few could take advantage of such programmes. Again, the attitudes of teacher organizations are going to be proportionate to the role of authorities in any scheme linked up with emoluments/benefits. It is largely dependent upon the hermeneutical perception of teacher organization leaders. Thirdly, there was never such a massive programme of teacher-improvement at higher education level. Further, there is an implicit suspicion of teacher credibility when efforts are made to have a mode of evaluation as envisaged in the appraisals, and to impose a code of conduct *a la* other professions. This contention is amply proved by the fact that the professional code of conduct came from authorities rather than from the grassroot level members of the profession. Credibility was sought to be given by getting approval for the same from the teacher organizations linking the same with the implementation of new pay-scales.

What can be done?

First and foremost, the appraisal system needs to be delinked from authorities and left to organizations other than those that have any element of employer-employee relationship. This has to be done deliberately and consciously, as there are always ways and means in any system, to reestablish the links. One of the starting points in this direction is to make it mandatory for the Institutions to release teachers (30%) per year for the Refresher/Orientation and other such programmes. Mere written or oral appeal by the Chairman or Vice-Chairman of UGC does not suffice.

On the part of teachers, to ensure that the programmes do not become opportunities to be away from work and have a holiday at the cost of public exchequer, the Academic Staff College (ASCs) should take seriously their implementation of programmes. The Course Coordinators or Departmental Heads should ensure that the programme is well-planned and a proper evaluation is done of the participants on the basis of their performance. The UGC should ensure that Refresher Programmes of specific subjects are given on the basis of the detailed programme submitted by the ASCs in specific fields/subjects. No Staff College should be given a Refresher Programme when the Department concerned is not capable of implementing the programme satisfactorily. One cannot blame the participants for the lack of interest in the programmes when lectures/sessions are engaged by individuals selected for reasons other than academic.

Every Academic Staff College should be converted into a place with all facilities for teachers to visit and spend considerable time preparing reports or writing dissertations or consulting library or experts. ASCs should also be equipped with facilities for data analysis, etc. or help teachers coming from rural colleges where no computer facilities etc. are available. University departments or city colleges are fortunate to have all modern equipment and gadgets which the colleges in mofussil areas do not have. Staff Colleges can provide or arrange for facilities for data analysis, etc. for which the teachers otherwise would have to pay for.

And finally, the most important function that an ASC can do is to provide a system of teacher appraisal whereby a participants of a Orientation/Refresher Course or any other programme can get a feedback and improve his/her performance, primarily to his own and students' satisfaction. A teacher appraisal in the present context is three-fold appraisal—(a) Self-appraisal; (b) Test results, and (c) Students' evaluation. The results of these three-fold evaluation, should be used to give a feedback to the teacher, and consequently left to the teacher to improve or not to improve his/her performance. The results of the tests may be retained by the

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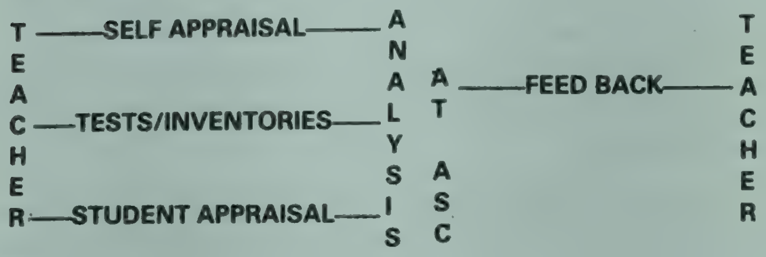
Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

ASCs for their own study but individual scores should not be made available to anybody other than the teacher concerned. This should be strictly adhered to for three reasons:

(i) Ethical principles of such work demand strict confidentiality; (ii) Teacher-appraisal does not end up into authority linked system; and (iii) No suspicion is created in the mind of the teacher that such data will ever adversely affect his/her career.



To study career or vocation for teaching or related fields the following inventories may be used: Kuder Occupational Interest Survey (KOIS) provides scores with reference to specific occupational groups, ranging from beautician and truck-driver to chemist and lawyer. Work Values Inventory (WVI) gives evidence to indicate how important are certain values, such as, intellectual stimulation, creativity, security, economic return, prestige, altruism, etc. for an individual in a specific profession. Survey or Interpersonal Values (SIV) studies one's values in relation to others.

To study attitude towards the job or profession, the following inventories may be used: Teacher Job-Satisfaction Inventory (TJSI) a test adapted to Indian situation, studies 15 areas of teaching job as interesting, chance for progress, use of ability, authority, co-workers, chance to be creative, independence, social status, security, relation with supervisers, variety in work, service conditions, personal recreation, moral values and identification. Job Attitude Scale (JAS) also helps to study teachers' attitude towards job. Job Satisfaction Instrument (JSI) is used to assess the efficiency of a worker in relation to job satisfaction. Although the test is ued for any kind of job, it helps to evaluate job satisfaction areas such as security, monetary remuneration, service conditions, future advancement, recognition of good work, social circle, working condition, nature of job, supervision, accommodation and leave facilities. Job Motivation Analysis Form (JMAF) can be used to study the dimensions and differences between highly and low satisfied teachers in relation to their job images, job ambitions, job aspirations, job inspirations, and job ideals. Job Anxiety Scale (JAS) can be used to measure the extent of job anxiety in teachers. Maslach Burnout Inventory measures the 3 elements of emotional exhaustion, depersonalization, and personal accomplishment.

And finally, in the area of effectiveness in profession the following tests may be used: Teacher Effectiveness Scale (TES) and Teacher Efficiency Scale can be used to measure teachers' effectiveness for the subject and teaching efficiency, after the scales have been adapted for teachers engaged in higher education.

In conclusion, the evaluation system and the feedback mechanism mentioned above is an attempt to promote professionalism in education. If professionalism includes as its elements, expert knowledge and a period of training, social importance and maintenance of standards, then it (teaching as a profession) requires institutional mechanism for self-analysis and corrective measures. I believe that these can be provided by Academic Staff Colleges if they are so organized. ☐

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NATIONAL LITERACY MISSION

T. Kumaraswamy*

Literacy is a must for an individual's growth and socio-economic development of the nation. Our government has recognised the need for literacy among the people. Various literacy programmes have been successful to certain extent and our literacy rate has increased from 16.67% to 36.25% from 1951 to 1981. But at the same time the number of illiterates have increased from 300 million in 1951 to 437 million in 1981. The literacy programmes have been constantly modified based on the drawbacks and experiences. The programmes of Adult Education gained momentum with the launching of National Adult Education Programme on October 2, 1978. It aimed at extending educational opportunities to the illiterate persons especially women, scheduled castes, scheduled tribes and other economically backward classes. The Programmes included 3 main components viz., 1. Literacy (reading, writing and arithmetic); 2. Functionality (knowledge relating to vocation/occupation of adults); and 3. Awareness (information relating to development programmes, family welfare programmes, and awareness pertaining to environment, social, political, economic and cultural aspects). Later in order to cover a larger number of illiterates the Govt. launched the Mass Functional Literacy Programmes where more emphasis was laid on involvement of NSS and Non-NSS students in the drive against illiteracy. The Mass Programme for Functional Literacy (MPFL) was launched in addition to Adult Education Programme during May, 1986 under Point 16 of the New 20 Point Programme. Based on the achievements and shortcomings of the earlier programmes, the Govt. started a new adult education programme namely, National Literacy Mission (NLM) on May 5, 1988. During this International Literacy Year (1990) and Literacy Decade (1990-2000), National Literacy Mission is expected to create a national landmark in the struggle against illiteracy.

National Literacy Mission is also known as Technology Mission for Eradication of Illiteracy. It is one among the six Technology Missions that have been accorded top priority by our Govt., namely, 1. Drinking water, 2. Immunisation, 3.Oilseeds, 4. Adult literacy, 5. Telecommunications, and 6. Dairy development. It aims at extensive utilisation of the scientific, technological, communicative and pedagogic inputs to make the process of acquiring literacy by adults quicker and easier. Achievement of self-reliance in literacy and numeracy, a better standard of living and general well-being are aimed at while imparting literacy to the adults. National Literacy Mission aims at imparting functional literacy to 80 million illiterate persons in 15-35 age group (30 million by 1990 and additional 50 million by 1995).

The major emphasis of NLM is on 15-35 age group because this age group is crucial for the country's development in terms of productivity, population, social and national integration. NLM lays major emphasis on rural areas particularly women and persons belonging to scheduled castes and scheduled tribes who constitute the majority of the illiterate segment. This is because of the reason that 85.6% in the 15-35 age group living in rural areas are illiterate. Among them 31.7% are men and 53.9% are women.

Further, National Literacy Mission aims at:

— Involving the voluntary agencies in a big way in the task of achieving literacy and other programmes of continuing education. It expected to involve 300 voluntary agencies in 1987-88, 700 in 1988-89 and 1,000 in 1989-90.

— Providing facilities for post-literacy and continuing education and short duration vocational training courses through the establishment of Jana Sikshana Nilayams (JSNs). About 60,000 JSNs are expected to start functioning by 1990. A JSN will be set up for a cluster of 4-5 villages covering about 5,000 population.

— Strengthening and improving the status of the ongoing Adult Education Programmes viz., Rural Functional Literacy Programmes, State Functional Literacy Programme, Mass Functional Literacy Programme, Programmes of Shramik Vidyapeeths and Voluntary agencies with the application of science and technology inputs, better supervision, suitable training, pedagogical innovations etc.

— Restarting of Functional Literacy Programmes for Women as an integral part of Integrated Child Development Scheme.

— Making systematic efforts to secure people's participation through media and communication, creation of local level participatory structure, taking out of jatthas, mass rallys, training of cadres of youth etc.

— Undertaking technology demonstration in 40 districts for development, transfer and application of techno-pedagogic inputs (20 well-endowed and 20 under-endowed districts).

— Reducing the span of control of superviser from

**Project Officer, Dept. of Adult Education, Sri Venkateswara University, Tirupati.*

30 Adult Education Centres to 8-10 Adult Education Centres. The superviser will be known as Prerak and he will also organise post-literacy and Continuing Education Programmes through Jana Sikshana Nilayams.

— Establishing District Resource Units for technical resource support, material preparation and for overall planning and administration of adult education activities.

The Technology Mission for Eradication of Illiteracy is a gigantic task calling for elaborate planning to wipe out illiteracy in the 15-35 age group. It is a societal mission and national activity and all political parties, educational institutions, Govt. agencies and voluntary organisations are expected to lend active co-operation for its success. What is needed is its systematic implementation. The following points may be considered in this regard:

1. The administrative and bureaucratic delays in releasing finances to universities, voluntary agencies and state governments should be made avoided.

2. The pedagogical researches and innovations should not be used directly in the adult learning situations as the perceptions and methods of learning of adults are different from that of children. Hence necessary changes should be made before hand.

3. Though there existed the involvement of the government department agencies in the programmes of adult education of universities and government, the practical involvement is far from satisfactory except under rare cases. There is a greater need to find out the causes for their apathy and to delineate strategies for their effective involvement.

4. Adult Education Centres should not become mere centres of adult literacy as is often observed. Most of the adults keep away from the centres due to the obvious reason that what they expect from the centres is lacking. The training of the grassroot level functionaries and the teaching/learning material provided to the centres must be in line with the requirements of the adults.

5. Most of the literacy programmes launched earlier failed due to lack of sufficient post-literacy and follow up activities. The literacy skills acquired by the learners were not put to practice and those learners relapsed into illiteracy. Hence the post-literacy programmes should be launched very effectively immediately at the end of literacy programmes. It must become a part and parcel of the whole literacy activity itself. Necessary facilities should be provided to all JSNs before hand on an operational level.

6. At present, the universities and colleges are involved in a big way in the drive against illiteracy. The centre-based Adult Education Programme and Mass Functional Literacy Programme organised by the NSS and non-NSS students are often unsuccessful due to lack of timely availability of finances from the universities and the UGC. A better mechanism should be evolved to clear the balances received and utilised for the programme without which the continuity of the programme during each year by the affiliated colleges comes to a standstill.

7. Often the teaching/learning materials provided to the adult learners are not able to satisfy the requirements of adults. The quality of slates, slate pencils, primers/janavachakams, posters, charts, models, blackboards, lanterns etc., should be maintained as it is a pre-requisite for the success of the programme.

8. The selection of instructors is very crucial in launching adult education programme effectively. Dedicated and committed students in social activities, local educated people having good rapport with the illiterates and people having zeal and enthusiasm to do something for the cause of the education of the adults should be selected as instructors. This is because of the reason that wrong selection of instructors based on personal interests, bias in terms of community, favouritism, recommendation etc., is hindering the success of the programme at the moment.

9. It is better to follow an area approach in eradicating illiteracy instead of shifting the projects from one place to another. It is suggested to make efforts in total eradication of illiteracy in a particular area and then moving on to the next area.

10. The appointment of field functionaries such as supervisers, Asstt. Project Officers, Project Officers etc., in the field of adult education is often found to be unsatisfactory. Some people are joining as functionaries without interest to serve in the field just for job's sake, some people are coming to adult education as in-service candidates from other fields which are not connected with adult education and some people having lower level of qualifications—at times equal to the qualifications of instructors are occupying the higher positions. The government and voluntary agencies should give priority to persons having some background of adult education such as Postgraduate degrees and diplomas while recruiting the functionaries.

11. Various development programmes such as Integrated Rural Development Programme, Drought Prone Area Programme, Training Rural Youth for self-employment. Integrated Child Development Scheme, Gramodaya Schemes etc. must be linked with functional literacy programmes. Preference has to be given to those

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Automation in University Administration

"The management of universities in our country has come to be so complex and complicated that it is now difficult even for the ablest administrators to strike a balance between the academic standards and social demands", said Prof. Jafar Nizam, Vice-Chancellor of Kakatiya University, while delivering the valedictory address to mark the conclusion of the 14-day Orientation Course to the Non-Teaching Staff of the Universities in India, recently organised by the University.

Prof. Nizam said that there was need for automation in all the branches of university administration to face the challenges posed by the complexities of the system and to ensure greater efficiency in their functioning to play their part well not only in augmenting knowledge but in developing the nation as well. The automation in all the universities in the country, he hoped, would be complete by the end of the 21st century.

The Vice-Chancellor called upon the administrative and supporting staff for their commitment to maintaining congenical atmosphere in the universities for a better rapport among the various components in order to develop them into centres of academic excellence.

Dr. K. Rajeshwer Rao, Coordinator of the Training Centre, presenting the report said that 25 administrative personnel representing 15 universities all over the country attended the fourteen-day long intensive training programme on University Administration. The resource persons included the senior faculty members drawn from the universities of Osmania, Kakatiya, Andhra and the Administrative Staff College of India, Prof. Dinker Sirdeshmukh, Dean, College Development Council, Kakatiya University, presided.

One of the participants from Kakatiya University said that the non-teaching staff with their rich and varied experience over the decades, when compared to teachers, were better equipped for administrative posts including the post of Registrar. He appealed to the Vice-Chancellor to take it up on the agenda at the Vice-Chancellors' Conference when it meets next to ensure uniformity in the appointments to the administrative posts drawn from the non-teaching staff.

Strengthening Technician Education

A massive project has been launched by Government of India, with the assistance of the World Bank to enable the State Governments to upgrade and stregthen their polytechnics.

The Project on 'Strengthening Technician Education' is taken up in two phases. Eight states were covered in the first phase which included the States of Karnataka and Kerala from the Southern Region. The remaining States and Union Territories will be included in the Second Phase which is expected to commence in early 1991. Capacity expansion, Quality Improvement and Efficiency Improvement are the major components of this project. A number of relevant sub-components are also included under each of these major components to meet the identified developmental needs of

Friendship University Greets Gujarat Vidyapith

The Patrice Lumumba People's Friendship University (PFU) of the USSR has sent a message of good wishes to the Gujarat Vidyapith on the occasion of its 70th anniversary. In his message to Prof. Ramlal Parikh, Vice-Chancellor, Gujarat Vidyapith, the Vice-Rector of the Friendship University, Prof. A. Ivanov has hailed the valuable contribution made by the Gujarat Vidyapith in the Liberation Movement in India in past and strengthening of International mutual understanding and cooperation through education at present.

The message reads as follows:

"On behalf of the University Council Rector of PFU and the whole International Staff of People's Friendship University representing 450 nationalities from 108 countries I have a great joy and privilege to greet the Gujarat Vidyapith on the occasion of its 70th anniversary. At the most memorable moment I would like laying emphasis on the valuable contribution of your University in the Liberation Movement in India in past and strengthening of international mutual understanding and cooperation through education at present. Unique role of Gujarat Vidyapith founded by an outstanding international leader Mahatma Gandhi in the year 1920 with an objective to establish a society based on truth and non-violence extremely increases at this dramatic period of the human history. We highly appreciate your approach to create Sarvodaya in souls of students at all levels of education by joining science and spirituality. Wishing you all the Professors, Lecturers, Officials and Students of Gujarat Vidyapith all success in academic, scientific and international activity."

the respective states. As desired by the Ministry of Human Resource Development, Government of India, the Technical Teachers Training Institute (TTTI), Madras has been extending services and assistance to the polytechnics for planning and implementation of this project. As part of this project, TTTI has organised the following programmes and activities:

* Faculty participation in the National Workshop on preparation of Guide Document for World Bank Project Schemes organised at TTTI Bhopal;
* Workshop on preparation of detailed project reports, finalisation of lists of equipment for conventional diploma courses and related aspects of Karnataka State conducted at TTTI Madras;
* Faculty assistance to the National Workshop for finalisation of lists of equipment for conventional diploma courses conducted at TTTI Bhopal;
* Conference of Principals to review progress of preparatory work related to World Bank Project held at Bangalore;
* Workshop on review and finalisation of detailed project reports for development of polytechnics with World Bank Assistance organized at TTTI Extension Centre, Hyderabad;
* Workshop on preparation of model detailed project reports for development of polytechnics with World Bank Assistance for the State of Tamilnadu conducted at TTTI Madras;
* Workshop on development of curricula for newly proposed diploma courses in the polytechnics to be set up under World Bank Assisted Project, held at Central Polytechnic, Trivandrum;
* Faculty assistance in formulation of Project proposals with World Bank Assistance for the Union Territory of Pondicherry held at Pondicherry;
* Conference of Principals to review implementation of activities relating to World Bank Assisted Project held at Bangalore;
* Workshop on development of curricula for diploma course in Sericulture Technology organised at TTTI Extension Centre, Bangalore.

The members of the World Bank Team, during their visits to the States of Tamil Nadu and Andhra Pradesh, visited the institute and discussed various aspects of development of technician education, teacher training and staff development. The team also visited the TTTI Extension Centre at Hyderabad and observed the facilities, programmes and activities of the Centre.

National Youth Council

The Union Government is reported to have set up a National Youth Council with Prime Minister V.P. Singh as Chairman to suggest policy measures and programmes for youth. The 220-member council will have at least 30 per cent representation for women. The Minister of Human Resource Development will be its Deputy Chairman while the Minister of State for Human Resource Development and the Deputy Minister for Youth Affairs and Sports will be the two Vice-Chairmen of the council.

The council will also advise the Government on measures for the implementation of the plan of action of the national youth policy.

The council will also provide feedback on the implementation of national youth programmes and review the coordination among various Departments of the Central and State Government and voluntary and other agencies.

The council has been constituted in view of the need to involve youth as responsible and responsive partners in nation-building activities and to equip them to meet the real challenges before the nation.

It would also motivate the youth to imbibe higher values and develop sterling personal qualities, inculcate pride and awareness of their rich heritage, imbue them with a passion for social justice and patriotic fervour and make them think and act as free, equal and committed citizens of a united India.

The council will meet at least thrice a year and its tenure will ordinarily be two years. The Government may extend the tenure of individual members.

New Courses at IGNOU

Indira Gandhi National Open University (IGNOU) proposes to launch a number of new programmes from the next year. These include B.Sc., Diploma in Higher Education, Diploma in Rural Development, Diploma in Nutrition & Health Education, Certificate Course in Water Resource Management & Diploma in Computer Applications for teachers.

During 1992, IGNOU shall launch Bachelor degree in Informatics & Diploma in early Child Care & Education.

The University at present has on its rolls around 1 lac students spread all over the country. Counselling for these students take place at 150 study centres throughout the country which are coordinated by 3 regional centres.

Literacy Day at Gauhati University

International Literacy Day was recently observed in the Department of Education, Gauhati University under the Presidentship of Prof. Dr. Lakshahira Das. The inaugural address was delivered by Prof. Dr. Renu Debi, who stressed literacy as an indispensable tool for the new international order in the present world community and emphasized the strategic role of students in eradicating illiteracy. Extempore speech competition related to literacy topics was organised. An essay competition on the topic, 'Role of University students in eradicating illiteracy' was also held and attractive prizes distributed.

B.M. Birla Science Award

The B.M. Birla Science Centre, Hyderabad, has instituted the B.M. Birla science prize to be awarded annually to young scientists for their outstanding contributions in the field of mathematics, physics, chemistry and biology.

The prize amounting to Rs. 1 lakh would be divided equally and awarded for contributions in two of the four disciplines by rotation in a year. This year it would be awarded for work in mathematics and chemistry.

News from Agril. Varsities

Wheat Workers' Workshop

The Narendra Deva University of Agriculture and Technology, Faizabad, in collaboration with Indian Council of Agricultural Research, New Delhi, hosted recently the XXIXth All India Wheat Workers' workshop. The workshop was inaugurated by the eminent scientist Dr. M.D. Pathak, Director General, U.P. Council of Agricultural Research, Lucknow. About 300 delegates from all over the country attended the workshop. These included Dr. R.S. Paroda, Dy. Director General, ICAR, Dr. M.V. Rao, Ex-Special Director General of ICAR, Dr. K.S. Gill, Vice-Chancellor, PAU, Ludhiana and Dr. Kirti Singh, Vice-Chancellor, HPKVV, Palampur. Besides, some noted wheat research workers like Dr. Meintosh from Sydney, Australia, Dr. Dubin and Dr. Peter Hobbs from International Centre for Wheat Research at Nepal and Dr. Ravi Singh, from CIMMYT also participated and shared their experiences in the workshop.

Welcoming the delegates Dr. U.C. Upadhyay, Vice-Chancellor of the University emphasised the need for improving research capabilities of the agricultural institutions in eastern U.P. to provide right kind of technological back-up to wheat improvement programme. He also emphasised that paddy-wheat cropping system should be popularised as this had a great potential in increasing the total production per unit area per unit time.

In his inaugural address Dr. M.D. Pathak recalled the great role played by the U.P. scientists in evolving well-known varieties like C-13 and K-68. Dr. M.V. Rao, the champion of the Green Revolution in the country, emphasised that besides scientific input, there was a need to look into the developmental aspects, agricultural policies and administrative outlook to achieve the high productivity in agriculture particularly in wheat. Dr. R.S. Paroda informed the delegates that the wheat project Directorate was being given an independent status with its headquarters at Karnal and barley will become a part of the wheat project.

The Plenary session of the workshop was presided over by Dr. R.S. Paroda. In this workshop, the major thrusts were the disease management, issues related to wheat production in hilly areas and cropping systems with wheat as a major component. Special sessions were organised to discuss these issues besides the routine workshop sessions on Breeding, Agronomy, Pathology, Quality Control, Physiology, Nematology, Entomology.

Among the most important recommendations of the workshop was the release of varieties like HPW-42, HS-223, HS-277, HS-295, and DTW-215. The workshop also recommended that varieties like DL-802-3, and PBW-226 in PZ (Irrigated, timely sown), Raj-3664 in PZ (irrigated late sown), PBW-226, UP-2296 and WH-544 in NEPZ (Irrigated timely sown) and PBW-226 and WH-544 (irrigated late sown), K-8822 in CZ (irrigated late sown) and DWR-163 (irrigated timely sown) may be included in IET's.

G-696 (Melorsulfovax) @ 2.5 g/kg of seed for controlling loose smut of wheat was recommended to seed growing agencies to have a wider choice of the seed dressing chemicals. The chemical Raxil (Bayer India Ltd.) @ 1.5 g/kg of seed for controling loose smut of wheat was also recommended under coordination alongwith the recommended fungicides.

The participants at the workshop unanimously reiterated that Tilt 250 EC @ 500 ml/ha should be sprayed once at the time of the heading of the wheat crop by the seed growing agencies to ensure karnal bunt free seed in karnal bunt endemic area. The two varieties, Lok-1 and Raj-3077 were recommended for cultivation under salinity/alkalinity conditions.

During the workshop, a number of research papers were also presented.

Conference of Executive Heads of Commonwealth Universities

The Association of Indian Universities (AIU) will play host to the next meeting of the Executive Heads of Universities in the Commonwealth being held under the auspices of the Association of Commonwealth Universities (ACU) in New Delhi from 14 to 18 January, 1991.

In each quinquennium the ACU convenes two meetings of the executive heads of member universities—one in conjunction with the quinquennial congress and one between the congresses. These meetings provide members with opportunities for personal contact and informal exchange of views and experiences as well as for formal discussions. During the life span of 77 years of the ACU this meeting is being held in India for the first time.

The Conference theme this time will be "Issues in and development of higher education—are new policies succeeding?" It will be recalled that developing countries constitute the bulk of membership of the ACU. Most of these countries have adopted policies and programmes of far reaching import in the field of higher education in keeping with their developmental perspectives, whether it be for expansion, excellence or equity in higher education, vocationalisation, distance education, teachers' training, use of technological aides, interaction with the community or any other. Again, it is no coincidence that there is a large area of commonality between the developing and developed countries in the commonwealth, as regards major issues facing higher education, whether they be relevance, accountability, accreditation, funding, efficiency or productivity. The Conference theme, "Issues in and development of higher education—are new policies succeeding?", therefore, is most opposite to the existing scenario in all these countries. Two keynote addresses, one by Prof. M.S. Gore, former Director, Tata Institute of Social Sciences and former Vice-Chancellor, University of Bombay on "Post Independence Socio-economic Development in India", and the other by Prof. Rais Ahmed former Vice-Chairman, University Grants Commission and former Vice-Chancellor, University of Kashmir on "Issues in and Development of Higher Education—are new policies succeeding?" will be delivered at the first plenary session of the Conference. Indian presentation on conference theme will be made by Prof. M.G.K. Menon, Minister of State for Science and Technology, Govt. of India, Prof. Yash Pal, Chairman, University Grants Commision (UGC), Dr. Malcolm S. Adisheshiah, former Deputy Director General, Unesco, and former Vice-Chancellor, University of Madras, and Dr. Sukhdev Singh, former Vice-Chancellor, Punjab Agricultural University and former President, AIU.

To facilitate indepth discussion, 5 sub themes have been identified for concurrent group discussions. These are.

1. Is higher education in developing countries a luxury or an essential means for their development?
2. Are opportunities for mass higher education and excellence compatible?
3. What organisational forms and structures are best suited to encourage innovation and change without compromising on accountability and standards?
4. Why should universities be autonomous and can they remain so within new government strategies for funding and for development of higher education and research?
5. Role of distance education in achieving mass higher education at affordable cost without erosion of standards.

The delegates will take a day off on 16th January, 1991 for a trip to Agra. An elaborate sight seeing programme within Delhi has been chalked out for such delegates who may not wish to take the trip to Agra. Cultural programmes are being slated for the evenings during the Conference days to offer the delegates a sampling of the rich cultural heritage of India.

Special programme has also been arranged for the spouses of the delegates and other accompanying persons. This is likely to include visits to Bahai's Lotus Temple, Lord Mahavir Vanasthali/Buddha Jayanti Park, SOS Children Village/Development Block, National Institute of Fashion Technology etc. etc.

Around 250 Vice-Chancellors of universities from all over the Commonwealth including India, are likely to attend the conference.

To afford the delegates to the Conference with an inkling of the gaiety, variety and long history of India, pre and post-Conference tours are being arranged, on payment basis, to provide them opportunities to visit cultural, historic and scenic places of interest like Ajanta and Ellora caves, Khajuraho Temples, Varanasi, Udaipur, etc.

News from UGC

Countrywide Classroom Programme

Between Ist November to 7th November, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

1.11.90

"COBOL – 6: Divisions"

"Gunther Hasse"

"Towards Better Spoken English"

2.11.90

No Telecast

3.11.90

"Rasaranjita – Understanding Indian Dance – 6: Mohini Attam"

"Jawahar Lal Nehru: The Architect of Modern India"

4.11.90

No Telecast

5.11.90

"Classical Mechanics – 6: Universal Gravitation"

"Management and Organisation"

"The Pest Story"

6.11.90

"Volumes of Reacting Gases"

"Nutrition Education in India"

7.11.90

"Vibration – I"

"The Living Heritage of Temple Architecture"

"From Molecules in Space to Life on Earth"

2nd Transmission
4.00 p.m. to 5.00 p.m.

1.11.90

"Computer in Distance Education"

"Geothermal Energy"

2.11.90

No Telecast

3.11.90

"Rabindra Sangeet – III"

"A Touch of Adventure – II"

"Change for the Better"

4.11.90

No Telecast

5.11.90

"Electronic Absorption Spectroscopy"

"Management – 13: Parkinson's Law and the Peter Principle"

"Earthworms – III"

6.11.90

"The Transition Metals"

"DNA Finger Printing – II: Application"

7.11.90

"Effective Structural Forms – II: The Beam"

"Protection of Japanese Created IBIS China"

"Marine Parks"

News from Abroad

Commonwealth Plan Tracer Study

Authorities responsible for the Commonwealth Scholarship and Fellowship Plan decided in 1984 that, after nearly 25 years of operation, the time had come to examine the results of the program in terms of personal and national development, satisfaction levels, employment rates, continuing contact with the host country, and so on.

The resulting tracer study dated January 1989 is a comprehensive review of the situation. Thirty per cent of the total scholars who held an award since the plan's inception responded to a survey undertaken in 1986. Two questionnaires were designed, one of which was sent to every Commonwealth scholar with whom contact was made, and the other to approximately 20% of these people. The second questionnaire is considerably longer than the first and seeks information of a more subjective and evaluative nature. The total number of short questionnaires received and analyzed in the report is 2,969 and the total number of long questionnaires is 714.

The vast majority of respondents hold the conviction that "the Plan is an instrument for international goodwill as well as a means for its recipients to develop personally." Some of the highlights of the survey are as under:

A "Brain Drain" exists from developed to developed countries, e.g. from Britain to Canada or vice versa, as much as from developing to developed.

Among 528 former scholars who are university professors, only 58 are women.

A large proportion of developed country recipients failed to obtain a qualification, diploma or degree, including 13% of Canadians.

Only 82% of recipients from 1980 and later are employed. Only 77% of women from all years are employed full-time with another 10% employed part-time.

There appears to have been a regular diminution in the numbers of scholars earning doctorates (from 52% of the total in 1960-64 to 32% since 1980), and a gradual increase in the numbers earning master's degrees (28% of the total in 1960-64 to 44% since 1980).

There is considerable interest among scholars in belonging to an alumni association, whether or not a fee is charged for membership.

The longer questionnaire returned by 714 scholars revealed the following:

Most scholars heard about the plan through university staff or faculty. Only a small percentage first heard of the plan through any kind of specialist literature. One role suggested for the potential alumni association would be to extend knowledge of the plan in their countries and fields of study.

Many developing country scholars were dissatisfied in their programs from a relevancy point of view. A Jamaican agriculturalist in the UK complained: "The project I was expected to work on was changed after I arrived in England. This was a disappointment as I would have preferred to do a project with more relevance to a tropical country."

While 78% of respondents indicated satisfaction with the teaching and supervision they experienced, it is "slightly worrying", as the authors of the report state, that the figures for those who regard the quality of the teaching and supervision they received when scholars as "very good" rarely goes over 50%. Critical comments were quite astringent, including "comments upon the supervisor's lack of availability, inability to try to understand the scholar's learning difficulties, and lack of keeping abreast with new developments in the subject so that the scholar comes to feel more briefed in his or her research area than the person directing him or her."

Only 9% of scholars experienced great difficulties of adjustment, but 17% experienced re-entry problems.

64% of scholars have paid a return visit to their host country and many maintain contact with people in the host country, apparently more for personal than business reasons.

The percentage of those who have found the award "very helpful" for their personal development is 73; of those for whom it has been "fairly helpful" the percentage is 23. A large majority of former scholars regard the plan as making an effective contribution to their nation's development, particularly those from the developing countries. Only 8% of the British respondents and 9% of the Canadian respondents said that it is "very helpful" to their nation's development.

The recommendations issued by the authors of the report include the establishment of a database register of scholars and the creation of a Commonwealth-wide association of former Commonwealth scholars. The proposals were discussed in June 1988 by 30 administrators of the plan meeting in Ottawa, and it was decided that ongoing information about scholars should be compiled by each national agency. The suggestion was made that further tracer studies might be undertaken at five-yearly intervals.

Copies of the 284-page tracer study are available from the

विद्यार्थियों/अध्यापकों के लिये शुभ संदेश

पठन-पाठन प्रक्रिया में सुविधा के लिये भारतीय विश्वविद्यालय संघ कई वर्षों से स्नातक व स्नातकोत्तर स्तर के विभिन्न विषयों पर अंग्रेजी भाषा में प्रश्न-बैंक प्रकाशित करता रहा है। इन प्रकाशनों में उपलब्ध सामग्री एवं सूचना शिक्षकों एवं विद्यार्थियों के लिये अत्यन्त उपयोगी सिद्ध हुई है।

हिन्दी भाषी प्रांतों के शिक्षकों एवं विद्यार्थियों की लम्बे समय से चली आती मांग को पूरा करने के लिये प्रश्न-बैंकों की इस श्रृखला को हिन्दी भाषा में प्रकाशित करने का हमारा यह पहला प्रयास निश्चय ही लाभप्रद सिद्ध होगा। इसी आशा के साथ प्रस्तुत है :

जन्तु विज्ञान (Zoology)	मूल्य रु० 100.00
रसायन विज्ञान (Chemistry)	मूल्य रु० 160.00
इतिहास (History)	मूल्य रु० 70.00

अधिक जानकारी के लिये लिखें अथवा सम्पर्क करें —

अवर सचिव (प्रकाशन)
भारतीय विश्वविद्यालय संघ
ए.आई.यू. हाऊस, १६ कोटला मार्ग
नई दिल्ली-११०००२

Commonwealth Secretariat,
Marlborough House, Pall Mall,
London, UK, SW1Y 5HX.

International Students in Canadian Universities

A new report by the Association of Universities and Colleges of Canada reveals that Canadian universities see hosting international students as beneficial and either wish to increase or maintain their numbers on campus.

The report, *Policies, Services and Capacity of Canadian Universities to Enrol International Students,* contains the results of a survey conducted last fall at the request and with the financial assistance of the Department of External Affairs. Its objectives were to determine the capacity of universities to enrol non-Canadians (hence it was referred to as an "absorptive capacity study"); their ability to attract them; their perception of the role of various organizations and government agencies in attracting them; their policies and services relative to international students; and their perception of Canada's role in international education.

In the questionnaires the universities were asked to indicate on a scale of 1 to 5 the magnitude of the role various bodies should play in recruiting international students to Canadian campuses. Eleven institutions ranked the Candian Bureau for International Education (CBIE) role as very important ("5"), and 19 others gave CBIE a "4". Only the federal government with 38 in these two categories ranked higher, and the provincial governments ranked just below CBIE with 29 in the two categories.

Universities identify insufficient financial aid, lack of high calibre candidates, and differential tuition fees as key constraints on their ability to enrol international students. They urge provincial governments to reexamine their differential fee policies and either eliminate or reduce them. They recommend in the interim that provincial governments consult with the universities on the manner of distribution of differential fee revenues to ensure that this does not act as a disincentive to the recruitment of international students by the universities. They also recommend that the federal and provincial governments make more scholarships and bursaries available to international students in need, and where these are not available, exemptions be introduced.

Universities see themselves as by far the most important and effective actors in promoting their educational services to international audiences. Yet, paradoxically, the vast majority of recommendations for improvement in the promotional and other areas are directed to the federal and, to a lesser degree, provincial governments.

National Literacy Mission

(Contd. from page 8)

persons who participate in the adult education centres while providing income generating units (cows, goats, sheep, poultries, fisheries, housing schemes etc.) by the government. This will help increase the participation of adults in the centres and thereby contribute to the success of the National Literacy Mission.

12. National Literacy Mission is a national endeavour and a national commitment to wipe out illiteracy by involving public money. Everybody should feel that this public investment of Rs. 550 crores on adult education activities is properly utilised. This is a people's programme and all the illiterate adults should make use of this educational opportunity which they have missed due to one reason or the other in their earlier period. Further, the public should guard against misuse of public money.

13. Proper and timely planning and budgeting of the programmes, appointment and training of functionaries, usage of mass media to attract adult learners, training monitoring, evaluation, periodical review and action research in the implementation of adult education programmes is a pre-condition for the success of NLM.

14. Under techno-pedagogy and technology demonstration and under continuing education it is expected to use audio-cassettes, slides, film strips, TV, VCR etc., to draw the attention of adult learners and to improve the pace and quality of literacy learning. Adequate steps should be taken to train the functionaries in the use of these gadgets with meticulous care and provision should be made for their safety after the learning activity of adults.

15. Universal enrolment and universal retention of children upto 14 years of age is necessary to stop the growing number of illiterates. Every year around 4 million are added to the number of illiterates due to growth of population. The coverage of dropouts and absentees of adult education centres is also necessary to implement the continuing education programmes effectively under National Literacy Mission.

16. All the educated persons have a moral responsibility to make at least one person literate, to create favourable environment for launching the NLM, to motivate illiterates and other elite persons to participate in the programme, to provide further education for the literates and to maximise their contribution in this national endeavour as responsible citizens. □

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemmation of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for awards of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department of Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCACATION

A list of select articles culled from periodicals received in AIU Library during October, 1990.

EDUCATIONAL PHILOSOPHY

Ghanchi, D.A. National concerns and higher education. *University News* 28(38), 1990, 1-5.

Oad, L.K. Research dimensions of education for human values. *J. Indian Edn* 14(5), 1989, 1-7.

Ramesh Chandra. Economics teaching for international understanding. *J Indian Edn* 14(5), 1989, 37-46.

EDUCATIONAL PSYCHOLOGY

Lassahn, Rudolf. Education is hard work fighting against the mere subjective nature of behaviour. *Education* 41, 1990, 29-44.

Lohman, David F. Human intelligence: An introduction to advances in theory and research. *Rev Ednl Res* 59(4), 1989, 333-73.

EDUCATIONAL SOCIOLOGY

Anderson, Gary L. Critical ethnography in education: Origins, current status, and new directions. *Rev. Ednl Res* 59(3), 1989, 249-70.

Baxi, Upendra. Mandal Commission and operative policy to end backwardness: Historic need for reasoned national dialogue. *Mainstream* 28(48), 1990, 5-6, 35.

Deshpande, Anjali. Reservations and Mandal report. *Mainstream* 28(44), 1990, 5,35.

Fitzpatrick, Anne R. Social influences in standard setting: The effects of social interaction on group judgements. *Rev Ednl Res* 59(3), 1989, 315-28.

Holloway, Susan D. and others. The family's influence on achievement in Japan and the United States. *Comp Edn Rev* 34(2), 1990, 196-208.

Majumdar, A. Dissecting anti-Mandal stir. *Mainstream* 28(48), 1990, 7, 31-2.

Stromquist, Nelly P. Determinants of educational participation and achievement of women in the Third World: A review of the evidence and a theoretical critique. *Rev Ednl Res* 59(2), 1989, 143-83.

EDUCATIONAL PLANNING

Buller, Paul F. and Stull, William A. Strategy and performance in cooperative education programs. *Res Hr Edn* 31(3), 1990, 257-70.

Harichandran, C. Educational planning: Some thoughts. *Yojana* 34(16), 1990, 9-10.

Thatte, Lina R. Role of educational planning in India. *University News* 28(40), 1990, 1-2, 18.

EDUCATIONAL ADMINISTRATION

Amrik Singh. The Chancellor as saboteur. *Mainstream* 28(43), 1990, 27-30.

Mohan, A.L. Autonomy and examinations. *University News* 28(41), 1990, 13-5.

Peretomode, Victor F. University organisation in Nigeria: An analysis of the academic department. *Prog Edn* 65(3), 1990, 60-5.

Sarup Singh. The role of Vice-Chancellors in Indian universities. *University News* 28(41), 1990, 1-6.

TEACHERS & TEACHING

Awipi, G. Maina. The affective domain in teaching. *J Indian Edn* 14(5), 1989, 13-21.

Bhatia, S K. Increasing pupil participation. *J Indian Edn* 14(5), 1989, 47-51.

Dubey, Archana. Admission to teacher training institutions: Some issues. *Prog Edn* 65(3), 1990, 69-72.

George, Mathew. Academic staff orientation programme: Systems approach. *J Indian Edn* 14(5), 1989, 52-8.

Sudha Rao, K. and others. Performance of academic staff colleges. *Mainstream* 28(44), 1990, 20-2.

EDUCATIONAL RESEARCH

Buchmann, Margret and Floden, Robert E. Research traditions, diversity and progress. *Rev Ednl Res* 59(2), 1989, 241-48.

Jacob, Evelyn. Qualitative research: A defense of traditions. *Rev Ednl Res* 59(2), 1989, 229-35.

EDUCATIONAL TECHNOLOGY

Gautam, Kirpa K. and Sachdeva, Harinder. Language teaching: The role of video. *J Indian Edn* 14(5), 1989, 8-12.

Hodgkin, R. A. Techne, technology and inventiveness. *Oxford Rev Edn* 16(2), 1990, 207-17.

EDUCATIONAL EVALUATION

Falchikov, Nancy and Boud, David. Student self-assessment in higher education: A meta-analysis. *Rev Ednl Res* 59(4), 1989, 395-430.

Reya, Himmat and others. A comparison of pre-test post-test and seddon methods of items analysis for criterion-referenced tests. *Prog Edn* 65(3), 1990, 73-5.

ECONOMICS OF EDUCATION

Bhaskaran Nair, P. V. Returns from investment on university education. *Yojana* 34(16), 1990, 11-2.

Guthrie, James W. and Pierce, Lawrence C. The international economy and national education reform: A comparison of education reforms in the United States and Great Britain. *Oxford Rev Edn* 16(2), 1990, 179-205.

SCIENCE EDUCATION

Koul, Lokesh and Romesh Chand. Retention of material in science: Comparison of PSI and conventional method of teaching. *J Indian Edn* 14(5), 1989, 31-6.

PHYSICAL EDUCATION

Brown, Susan C. Selecting students for graduate academic success and employability: A new research direction for sport management. *J Sports Management* 4(2), 1990, 133-46.

Grewal, Baljit S. Modern olympic movement. *University News* 28(42), 1990, 4-5.

Olafson, Gordon A. Research design in sport management: What is missing, what is needed? *J Sports Management* 4(2), 1990, 103-20.

LIBRARIES

Navalani, K. Manpower in university libraries in India: A study into the level of its satisfaction with its status. *CLIS Observer* 7(1-2), 1990, 20-4.

Prasher, R. G. Information technology and Indian university libraries. *CLIS Observer* 7(1-2), 1990, 5-15.

ADULT EDUCATION

NATIONAL LITERACY Mission: An overview. *Yojana* 34(16), 1990, 7-8, 28.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Paulston, Rolland G. Toward a reflective comparative education? *Comp Edn Rev* 34(2), 1990, 248-55.

Skiera, Ehrenhard. The progressive education movement and school in Europe: Developments, teaching-method profiles, perspectives. *Education* 41, 1990, 7-28.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

BIOLOGICAL SCIENCES

Anthropology

1. Shyamacharan Singh, T. *The Tai people of Assam, a physical anthropological perspective.* Dibrugarh. Dr. M.N. Phookan, Prof., Department of Anthropology, Dibrugarh University, Dibrugarh.

Environmental Sciences

1. Rao, Saraswati. *A volumetric study of airborne viable fungi at Visakhapatnam (A.P.) India.* Andhra.

Biochemistry

1. Ray, Samir Kumar. *Studies on extracellular cellulase complex*

of Myceliophthora thermophila D-14, a thermophilic fungus. Calcutta.

2. Vaidya, Seema. *Studies on the modulation of lipids in Microsporum gypseum*. Panjab.

Botany

1. Bhattacharyya, Kakali. *Chromosome analysis, in situ DNA estimation and differentiation in certain taxa of Fabaceae (Papilionaceae)*. Calcutta.

2. Dasgupta, Pradip Kumar. *Study of the some of the important physiomorphological characters of Psophocarpus tetragonolobus (L) DC*. Burdwan. Sri Paragranjan Dasgupta, Reader, Department of Botany, University of Burdwan, Burdwan.

3. Gupta, Nibha. *Studies on the yellows diseases of some oil yielding and vegetable plant species*. Rajasthan. Dr. S. Misra, Department of Botany, University of Rajasthan, Jaipur.

4. Patil, Prabhakar Bhimarao. *Cytotaxonomical and chemotaxonomic studies in the members of Orchidaceae*. Karnatak. Dr. K. Nataraj, Chairman and Prof., Department of Studies in Botany, Karnatak University, Dharwad.

5. Roy, Sumita Ghosh. *Development of methods for micropropagation of carnations and Angelonia*. Delhi.

6. Sonakia, Vijay Kumar. *Physiological investigations on photosynthesis and productivity of Vigna mungo (L) Hepper*. Durgawati. Dr. D.K. Tiwari, Prof. and Head, Department of Botany, Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur and Prof. D.P. Tiwari, Government Science College, Jabalpur.

Agriculture

1. Gill, Baljinder Singh. *Effect of transplanting dates and stage of harvesting on the herb and oil yield of French basil, Ocimum basilicum L*. PAU.

2. Gunjal, Suryakant Shivram. *Studies on Frankia microsymbiont from Casuarina equisetifolia L*. MP Krishi. Dr. P.L. Patil, Agricultural Bacteriologist, College of Agriculture, Pune.

3. Kapoor, Rajiv Kumar. *To study the genetic architecture of yield and its components in green gram, Vigna radiata (L) Wilczek*. CSAT. Dr. M.M. Pathak, Assoc. Prof., Department of Genetics and Plant Breeding, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

4. Mishra, Vijay Kant. *Fertility management and reclamation of salt affected calcareous soils under rainfed conditions as affected by the method of application and doses of pyrite*. Rajendra Agrl.

5. Mohammad Asrar Alam. *Studies on the effectiveness of Bacillus thuringiensis Berliner against Pericallia ricini Fabricius (Lepidoptera: Arctiidae)*. CSAT. Dr. Y.K. Mathur, Prof. and Head, Department of Entomology, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

6. Pandey, Ajai. *Effect of herbicides on the microsymbiont, symbiosis and rhizospheric microflora in black gram, Vigna mungo (L) Hepper*. CSAT. Dr. B.R. Gupta, Assoc. Prof., Department of Soil Science and Agricultural Chemistry, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

7. Pandey, Ram Ji. *Nutrient uptake pattern and grain quality of different varieties of rice and wheat as influenced by fertility levels and dates of transplanting/sowing*. CSAT. Dr. Hari Shanker, Assoc. Prof., Department of Soil Science and Agricultural Chemistry, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

8. Ram Sharan. *Studies on the effect of growth regulators and nitrogen nutrition on the growth, yield quality and storage behaviour of banana, Musa paradisiaca L cv. 'Harichhal'*. CSAT. Dr. A.R. Singh, Assoc. Prof., Department of Horticulture, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

9. Sachan, Sheo Prasad. *Genetic analysis of yield and quality parameters in yellow seeds Indian mustard, Brassica juncea (L). Czern and Coss*. CSAT. Dr. Prahlad Singh, Assoc. Prof., Department of Genetics and Plant Breeding, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

10. Satinder Pal Singh. *Comparative assessment of different selection methods in pigeonpea, Cajanus cajan (L) Millsp*. PAU.

11. Seemad. *Study of the variability and selection for symbiotic nitrogen fixation in lucerne, Medicago sativa*. PAU.

12. Singh, Akhilesh. *Pathological investigations on common scab of potato caused by Streptomyces spp*. CSAT. Dr. D.V. Singh, Assoc. Prof., Department of Plant Pathology, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

13. Singh, Arun Kumar. *Physiological studies on zinc nutrition of linseed, Linum usitatissimum L*. CSAT. Dr. R.D.L. Srivastava, Assoc. Prof., Department of Plant Physiology, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

14. Singh, Rajkumar Kumarjit. *Characterization, release pattern and efficiency of Udaipur rock phosphate in acid soils of Bihar*. Birsa Agrl.

15. Singh, Surendra Bahadur. *Genetics of yield and its components in field pea, Pisum sativum L var. arvense Poir*. CSAT. Dr. A.N. Srivastava, Senior Scientist (Oilseeds) (Retd.), Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

16. Singh, Surendra Nath. *Studies on cultural and pathogenic variability of Myrothecium roridum Tode ex Fr associated with leaf spot of mungbean*. CSAT. Dr. P. Shukla, Assoc. Prof., Department of Plant Pathology, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

17. Sirjit Singh. *Response of summer moong, Vigna radiata to boron and molybdenum with and without phosphorus*. CSAT. Dr. V.S. Verma, Assoc. Prof., Department of Agronomy, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

18. Tripathi, Shyam Babu. *Distribution of sulphur in soils under forage crops and its effect on forage production and quality of fodder*. CSAT. Dr. R.S. Singh, Assoc. Prof., Department of Soil Science and Agricultural Chemistry, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

19. Verma, Ram Narain. *Comparative performance of dwarf wheat and triticale under limited resource condition*. CSAT. Dr. V. Singh, Prof. and Head, Department of Agronomy, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

20. Yogendra Prasad. *Studies on alternaria leaf spot of groundnut, Arachis hypogaea L*. CSAT. Dr. Udit Narain, Assoc. Prof., Department of Plant Pathology, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

21. Zaffar, Imam Mohammad. *Population dynamics of rice stink bug in relation to varietal reaction and fertilizer application.* Rajendra Agrl.

Zoology

1. Chadha, Neeraja. *Purification and characterization of buffalo pituitary prolactin.* Delhi.

2. Chattopadhyay. Indranil. *Reproductive biology of Isoparonchis hypselobogri Billet 1878 (Digenea: Trematoda).* Calcutta.

3. Chattopadhyay, Jyotirmoy. *Effect of X-irradiation on spermatogenetic and allied cells in male mice, Mus muscalus.* Burdwan. Prof. Shyamal Kumar Basu, Department of Anatomy, Burdwan Medical College, Burdwan and Dr. Trilochan Midhya, Lecturer, Department of Zoology, University of Burdwan, Burdwan.

4. Das, Gobinda Pr. *A study of correlation between metabolic and nutritional status in diabetes mellitus patient as well as in induced diabetic animal.* Burdwan. Dr. Chittaranjan Maity, Prof., Department of Biochemistry, Burdwan Medical College, Burdwan.

5. Dhaliwal, Babli. *Studies on polyamines in cancer.* Bangalore. Dr. Geetha Bali, Department of Zoology, Bangalore University, Bangalore.

6. Howlader, Abdul Jabber Tofazzel Hossain. *Observations on some aspects of biology of tobacco beetle, Lasioderma serricorne F (Coleoptera: Anobiidae) with respect to possible controlling measures utilizing certain conspecific organismic products and a biological agent.* Baroda.

7. Joseph, Antony. *Study of the fishery, biology and behavioural ecology of some prawn species of the gulf of Kutch with special emphasis on the ginger prawn, Metapenaeus Kutchensis (George, George and Rao).* Saurashtra. Dr. V.C. Soni, Department of Bio-Sciences, Saurashtra University, Rajkot.

8. Khan, M.D. Delawar Hossain. *Observation on deterrent or arrestant influence of some locally available plant species on cigarette beetle, Lasioderma serricorne F. (Coleoptera: Anobiidae) that possibly could be employed for control of this pest.* Baroda.

9. Mohini. *Studies on some histochemical and histoenzymological aspects of cestode, Multiceps multiceps Leske, 1760 with a report on the histochemical nature of Taenia pisiformis Bloch, 1780.* Osmania.

10. Pathak, Era. *Studies on the haemolymph proteins as related to growth moulting and reproduction of some insects.* Durgawati. Dr. S.C. Pathak, Department of Biological Science, Rani Durgawati Vishwavidyalaya, Jabalpur.

11. Sangita. *Studies on the postembryonic development of Cassida enervis Boh. (Cassidinae: Chrysomelidae: Coleoptera) alongwith some notes on the biology of a few chrysomelid pest species of North India.* Punjabi. Dr. J.P. Singh, Department of Zoology, Punjabi University, Patiala and Dr. H.S. Rose, Department of Zoology, Punjabi University, Patiala.

Medical Sciences

1. Gupta, Vishwa Nath. *Synthesis and biological activity of guinazoline analogues.* Panjab.

2. Krishnamurthy, V. *Biological aspects of metal toxicity with particular reference to manganese and lead.* Bangalore. Dr. B.S. Sridhara Rama Rao, Prof. and Head, Department of Neuro Chemistry, National Institute of Mental Health and Neuro Sciences, Bangalore.

3. Vinod Kumar. *Pharmacology of the antidiuretic lung peptide (ADLP).* Delhi.

Animal Husbandry

1. Balwant Singh. *Effect of management factors on growth and development of buffalo calves.* PAU.

2. Rajinder Kumar. *Studies on immunological control of Boophilus microplus and Hyalomma anatolicum on crossbred cattle.* PAU.

3. Singh, Dhirendra Kumar. *Purification, physico-chemical and biological properties of Bacillus cereus toxin.* Birsa Agrl.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
December 9-12, 1990	18th International Marketing Congress	The theme of Congress is Marketing Cooperation with North America	Institute of Marketing Management, New Delhi.	Dr. Jagjit Singh, Secretary General & Senior Professor, Institute of Marketing Management, 62-F, Sujan Singh Park, New Delhi-110 003.
December 13-15, 1990	DEI-UGC National Seminar on Translation-Transcreation and Creative Writing in English.	To develop courses in Translation, Transcreation and Creative Writing in English for College/University Teaching.	Department of English, Dayalbagh Educational Institute, Agra.	Dr. Darshan Dayal, Head, Department of English, Dayalbagh Educational Institute, Dayalbagh, Agra-282 005.

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10. Entomology	1
11. Limnology & Fishries	1

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Prof. V. Abraham
DIRECTOR

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UNIVERSITY NEWS

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Editor :
SUTINDER SINGH

15 NOV 1990

Twentieth Century Changes and Their Challenges to Higher Education in India

H. Francis Soundararaj*

We are in the last decade of the 20th century and soon we shall be in the next. It is crucial for educational planners to assess the changes brought about by political, technological, economic and social forces during this century in our country and to face the consequent challenges thrown at the academia of the land. Higher education in our land is facing such far-reaching changes that unless it responds to them creatively, progress and development will only be a phantom that we may pursue but not reach. Let us briefly look at some of these changes and their implications.

The commonplace statement often made about higher education, at least in India, is that it is a colonial heritage that does not suit the needs of the country. It is said that the purpose of such education was merely to train men and women to be clerks in offices and banks and teachers in schools and colleges. We know that it is an oversimplification and not substantially true: we know that the privileged men and women who were beneficiaries of such education were able to capture the spirit of individualism of the West and achieve freedom for the land. We also know that the single blessing of the English language has gone a very long way to keep our land in pace with developments elsewhere on this planet. The fact is not that system of education brought into our campuses is either colonial or western; it is that such a system of education was made to meet different needs which are not essentially our needs. The great universities of Britain, for instance, were located in urban areas in close proximity to residence of kings and lords who formed a leisured aristocracy to pursue learning for its own sake. The education was "liberal" in the sense that those who received it were a "free" class of people who had no need to work in order to earn. The curricula were accordingly shaped to meet the needs of such people. Rhetoric was taught to develop courtly elegance in speech—centuries of linguistic exercises centred round refining self-expression. History was taught to remind kings and nobles of the lessons of war and peace. Philosophy was likewise carried to Aristotelian subtleties. The whole education was geared to produce a "genteel" culture which had much to do with the manners of living.

The great benefit of such an education was the creativity in art and culture, in painting and literature, and in scholarship for its own sake in general. While this may yet remain our distant ideal, it is neither possible nor desirable to transplant such a system of education into a country like India where the teeming population can never imagine to raise a leisured class that is "free" from the need to work or to keep such a curriculum of studies serving such purposes which are not ours at least now. Such a system, for that matter, is anachronistic in the world today where living is wrought with such complexity and such problems which cry for the involvement of the whole human race; and it is not right for any section of it to remain secluded in the ivory tower of the recluse. It is against this seclusion Emerson gives the clarion call to the American scholar exhorting him to surrender to the world of work and human company. Not fully aware of this basic incompatibility of the system of education brought in, we have gone on to perpetuate it. The first big universities of India were established in the large coastal towns of Bombay, Calcutta and Madras. The curricula were made of liberal arts—sciences took a second place—and the only employment generated was that of occupancy of white collar positions. The urban areas developed an elite that did not integrate with the masses. Education therefore created regional and social imbalances and did not attempt to remove them. The status quo was maintained even after the British had given over reins of government in India. Offices and banks were run in urban areas and education continued to supply the manpower needed to maintain them.

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* *Principal, Madras Christian College, Tambaran, Madras-600 059.*

Another disadvantage the education system was beset with, in the initial stages during this century, was that the democratic wave released with the freedom struggle did not substantially influence education. The freedom struggle remained political and adult-monitored. It did not drive the youth of the country into the acstasy of shaping a world of their own according to their dreams and ideals in the way such upheavels elsewhere in the history of the world are known to have so inspired young men of vision. As a result of the academia was left outside the challenge of shaping the nation. The business of building the New India was mostly that of politicians and political processes; the academia was allowed little or no room to participate in shaping the new nation.

This explains the reason why we have no panegyrics of the freedom won by us comparable to those found elsewhere in the world; we have no philosophies or ideologies of our own whereby we could structure and shape the new nation; all our epics are those of the past and some of them were made to celebrate less significant occasions and many of our ideologies are syncretic. On the contrary the extent to which the academia was involved in the shaping of their new-found land in North America, for example, is breath-taking. The Mayflower settlement in New England made the bright minds of the land go into a stream of ceaseless creativity caught in the world-known New England literature. Southern literature is redolent with creative excellence born out of the human struggle with the unjust systems of the old world. The material make up of the nation owes a great deal to the indigenous philosophies, such as that of transcendentalism, churned by teachers and scholars. Art and painting and literature were interwoven with the social transformation of the new nation. In the travails of the birth of the new nation as well as in the exultation of growth and development, the bright minds of the academia were never side-stepped. The tradition still continues; the technological developments are determined in laboratories; statesmanship is generated in classrooms. In India we have missed such a glorious opportunity for which none is to blame at this end of Time because we have moved with the current of history and not made it, if history is anything more than event.

These disadvantages have in a sense stunted our educational development. However, at the close of the century change has become imminent. In India the social imbalance is becoming a matter of serious concern. Education is becoming more widely participatory. Free education, reservation for the deprived classes, and other encouragements have brought about a change in the educational scenario. The learners are no longer a homogenous privileged group of the urban or upper-middle class sections of society. From homogeneity we move towards heterogeneity. The system of education must quickly respond to such a welcome change. The implications in terms of restructuring curricula, planning of remediation programmes, creation of opportunities of employment and academic development are the new challenges that ought to be met.

Another change, equally significant as the democratisation of education, is the integral connection between national development—developing countries can hardly afford to bypass this—and knowledge. During the 20th century knowledge has been walking hand-in-hand with development. This is reflected in the changing patterns of curricula, which reflect the different phases of national development and corresponding popular demand. Earlier than the fifties there were hardly any changes in university curricula in India. One who acquired proficiency in speaking and writing in English was good enough to enter upon a career and make a mark in society. However, in the fifties, owing to the beginning of national economic planning for development, Economics came to occupy the prime of place superseding History or Philosophy. The subsequent emphasis on industrial development tilted the scale in favour of sciences and of Physics and Chemistry in particular. Further development in terms of mechanisation and technological advances favoured biosciences. With the Computer revolution peaking up, Physics and Mathematics are in the ascendancy. As attention is increasingly being given to generation and conservation or distribution of wealth, Commerce and Management Sciences are prominent. Equally prominent are professions of medicine and engineering which go to develop individual material welfare and prosperity. A cursory look at the shifting curricula shows that, at least in a developing nation, education spontaneously and necessarily undergirds national development. One may be tempted to condemn such development as pursuit of materialism. Perhaps the charge may be true if an affluent nation pursues materialism for its own sake. As the saying goes "unless there is a surface you cannot paint a portrait" and, accordingly, unless there is minimum development, a nation cannot fulfil its aspirations. To that degree materialism is more a help than a sin. And education will do well to be supportive of it. Only the purpose of development shall be noble.

The third change which education has to reckon with in the twentieth century is that caused by knowledge explosion. Never perhaps in the history of human knowledge, since the Renaissance, had there been such a phenomenal growth of knowledge as at present. Hence we speak about an "explosion" of knowledge. This is primarily because of the rapid development of science and technology. Just a small instance will do to convince us of the rapidity of the growth of knowledge. Speaking about the so-called "chip-revolution" one is astounded to note the incredible rate of its development. In 1951 there was just 1 circuit per chip; in 1964 it became 10; in 1970, 100; in 1976, 32,000 and in 1982, 100,000. No wonder computers are changed in increasingly shorter intervals by improved models. Again the interval between discovery and application of new gadgets and devices is becoming shorter and shorter. Photography was discovered in 1727 and it took 112 years for the first camera to be marketed in 1839. The electric bulb took 65 years and now computers are changed in fewer than two years. Also the size of technology gets reduced as knowledge increases and it becomes cheaper. The revolution in micro-electronic base technology is the cause of such a change. All these pose a challenge to education. The conventional monolithic and cumbersome educational structure, often recalcitrant to change, will not do. Our system ought to become less formal and more flexible to bring about changes to meet knowledge explosion. In Japan formal university education is supplemented by continuing educational programmes run by industries themselves which periodically update knowledge of their employees. In U.K. work and study are linked within the formal system so that the learner may be in step with the current development of knowledge.

Fourthly, the conventional understanding of knowledge is giving way to lift our vision to more receding horizons. In the past, Economics identified land, labour, capital and distribution as factors more or less static in economic activity. Now the concept of land is changing. The raw materials themselves are replaced. Wood is replaced by fibre-glass for instance; steel by synthetic material; the plastics have supplanted many others. The conventional understanding of labour is changing as automation is increasingly used. Labour is further modified by the replacement of Repair-Culture by Replacement-Culture; we are now used to replace gadgets instead of repairing them. These changes offer another challenge to higher education. The so-called theoretical knowledge that was the hall-mark of education in the earlier decades of this century is found inadequate to meet present needs. More skill-orientation is required to go hand in hand with knowledge acquisition. White collar engineers and veterinarians are now expected [illegible] be also mechanics and stockmen and IITs will wear out in polish if they do not take the field of application seriously. An educational system which is conservative and traditional is often a stumbling block to the development of knowledge just as an attitude of conservative purism towards a language hampers its growth.

As educational planners and teachers we are at the cross-roads of change. The directions in which educational development may be determined are becoming clear. On the one hand liberal education needs *diversification* to accommodate the change in, and growth of, knowledge that we have witnessed, The rate of accommodation of knowledge explosion ought therefore to be accelerated. On the other hand *equity* in education, especially in countries where there are regional and social imbalances, may be achieved by facilitating larger and greater participation by those who have been kept outside the pales of knowledge and those who are economically very poor. The greatest challenge is to make the academia still astutely pursue academic excellence. Educational institutions ought not to deteriorate into coaching or rehabilitation centres; the task of shaping minds in order to make them reach utmost brilliance ought not to be compromised under social pressure. It is according to the success or failure of holding these goals in balance our educational service will be judged in the immediate future.

The New Education Policy of India of 1986 has suggested some remedies to meet the changes in the educational scenario of the present century. The traditional affiliating university system has been rightly identified as the cause of the inability to change educational goals and services. The concept of autonomy for colleges to design curricula, to have their own system of examination, and to admit students and appoint teachers so as to fulfil the specific goals of the institution is advocated. The relationship to the university is described as one of the "creative participation" and not control and uniformity of operation. In a limited way the reform will bring benefits. Inasmuch as such a measure is only remedial and not conceptually evolved this may have only limited advantages of freedom, especially because state and university controls cannot be as helpfully flexible as one might desire. These are already given structures which one has the least freedom to modify. Nevertheless this is a step in the right direction. In our own country there are about 100 autonomous colleges with another 150 awaiting clearance to become autonomous. The New Educational Policy also encouraged educational reforms such as establishment of Academic Staff Colleges to facilitate updating of knowledge. Value education is another area attended to in the process of rethinking education so that the principle of equity may be accepted as an integral part of our value system. These are not enough as they are not commensurate with the rapidity and magnitude of changes which have come about in the educational scenario of our country during this century. We need to think and plan and do far more. Change we must, and change fast, to keep education an integral part of our life and work. ☐

HIGHER EDUCATION OR JUST TERTIARY EDUCATION?

Om Prakash*

The first two stages in formal education are traditionally termed as "primary" and "secondary" respectively. Finer classification is made by using prefixes such as 'pre' primary, 'upper' primary and 'senior' secondary. The twelfth class marks the end of school education, and all that follows is called "higher education" instead of being called "tertiary education". This loose terminology has led to much loose talk about the pattern and course content of the tertiary stage of education and also about the expectations from, as well as the expectations of, the youth going for the same. The intermittent call for delinking degrees from jobs on the one hand, and increasing demand for job-oriented, skill-based, professional courses in colleges on the other, are indicative of this confusion about the aims and objectives of education beyond the secondary stage. While concern for employment and employability is understable, it also needs to be understood that a skilled salesman or an accurate accountant or a competent managers, and for that matter, a practitioner of law, medicine, pharmacy and the like, need not necessarily be a learned men unless he has developed in himself a love for learning.

Historically, the Macaulayian education had been a source of distinction in our country. What to talk of a degree, even a school certificate used to be a gate pass for a white collar job. This was so merely because of the short-supply of the educated and not by our virtue in the subject matter taught. A matriculate used to be considered good enough to be a 'babu' under a white skinned officer. With increase in the number of schools, matriculates came to be available in plenty and the distinction of being rare commodity passed on to the graduates. In the year of independence (1947-48), there were only 19 universities and 400 degree colleges in our country, having only about 2,66,000 students on their rolls! The decade of nineteen sixtees saw a particularly steep rise in their numbers, which went up from 45 universities and 1500 colleges enrolling a little over 10 lakh students in 1960-61 to 105 universities and 3600 colleges enrolling over 31 lakh students in 1970-71. The corresponding figures for the year 1987-88 are 155 universities, 6000 colleges and 36 lakh students respectively. Quite naturally, this swelled the figures of the educated unemployed and caused some disenchantment with the so-called liberal higher education. Not only the disillusioned job-seekers but also the politicians and the demagogues began finding all sorts of faults with the prevailing system of education.

The careerists began to doubt the very purpose of 'higher education' if it was not to help the graduates in securing 'respectable' employment. Theterm 'educated' was, for them, only a synonym of 'employable'. The rush towards professional courses in law, medicine, engineering management etc. increased, and the institutes of technology came to be regarded as the most prestigious institutions of higher learning. Those whose parents could afford to do so, began buying seats in unscrupulous professional colleges by paying donations and capitation fees. For rest of the adolescents, securing admission to professional courses through stiff competitive examinations came to be recognised as the first struggle in life. But soon professionally trained young men also began complaining of unemployment and under-employment.

The phenomenon of educated unemployment led to a number of reactions in the thinking about education. In the first place, the need of providing vocational education in schools, particularly at the senior secondary stage, came to be emphasised. This, coupled with training in industrial training institutes, polytechnics etc. was sought to attract early job-seekers, who would marketing, agriculture, pharmacy, para-medical services and the like, as also in self-employed trades of plumbing, carpentry, electrical gadget-repairing, automobile servicing etc. This was intended to siphon off the less ambitious masses from the conventional general education stream, thus reducing the rush of those going for degree courses in colleges and universities.

Secondly, introduction of job-oriented courses of applied nature also in the first degree courses began to be advocated. Some examples of courses suggested are: salesmanship, financial accounting, secretarial practice, tourism, hotel management, garment designing, textile dyeing and printing, drama and film acting, advertising and mass communication, poultry farming, bee-keeping and the like.

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* *Principal, Government College,*
Kishangarh, (Rajasthan)

This kind of talk often shows a lack of conviction as well as of clarity. A forthright training in such areas on considerations of demand and supply of employment market could be welcome. But combining two traditional subjects of humanities or social or natural sciences with one job oriented course makes one wonder whether the attempt is to force vocational training in the name of liberal education or to thrust the teaching of traditional subjects with the help of temptation offered by job-oriented courses.

Higher academic degrees never had any direct link with jobs outside the realm of learning. The repetition, so often in recent years, of the suggestion to delink degrees from jobs sounds more like a counsel of despair. The attempt seems to be of announcing that those entering universities may do so at their own risk and that their chances of securing white collar jobs would not improve on their becoming graduates in humanities or sciences. On the other hand, if the attempt is to present the situation properly and to distinguish it from the transitory past phase of short-supply of graduates, delinking degrees from jobs would be a welcome much delayed step. It would lead to better discrimination between tertiary education on the one hand from higher education per se on the other. All education following the senior secondary stage is not real "higher education" and need and importance of recognising tertiary education in fulfilling country's requirements of skilled manpower of all levels, from self-employed entrepreneurs and middle level supervisers to top level managers and professionals has to be faced squarely.

Higher education, to begin with, seeks to develop analytical and synthetical faculties of mind so as to make it able to pursue independently an activity such as conducting a survey or a study or an experiment, organising and comparing data, drawing inferences, examining logic of a hypothesis or theory, proposing a thesis, and so on. In its next step, higher education makes the mind inquisitive and innovative, ever eager to receive and react to new thought, and to think and present own ideas. It makes the learner conscious of his ignorance, creating in him a quest for deeper and deeper understanding and perception of the chosen subject or discipline. Finally, higher education leads to creative thinking and research, giving rise to new conjectures, hypotheses and theories. The collective effort of those engaged in the field of higher education results in understanding and assimilating the knowledge gathered by mankind through the ages, adding to the same, and passing it on to the posterity. In this endeavour no discipline is more or less important than the others, for learning needs to be advanced in all directions. Both the traditional subjects of arts and sciences, often called 'pure' disciplines, as well as the subjects of 'applied' nature fall in the field of higher education when studied with this objective of advancing knowledge and learning and not with that of gathering skills. Just as a professor of political science is not an astute politician, in the same manner a professor of jurisprudence is not *ipso-facto* a successful lawyer and a professor of management is not a competent manager. Looking at the same thing from a different angle, while efficient engineers may be busy building houses and colonies, should not some others be dreaming of new kinds of settlements on sociological, ecological and aesthetic considerations? While surgeons may be busy developing skills in microsurgery, should not some others investigate the nature of the fundamental urge of survival and procreation that distinguishes animate from the inanimate, and lies at the root of all healing processes? If so, an institute of medical sciences is not just another better equipped hospital and an institute of technology another more costly or sophisticated training institution. Coming back to our starting point, a university is not just another Macaulayian factory turning out employable graduates. Rather, they all are institutions of higher education, established to promote the cause of learning. The higher education sector is the country's thought-bank, not only carrying out all kinds of researches but also acting as custodian of values that should provide purpose and direction as well as conceptual model for development of society in all fields including those of economic planning and industrial growth.

This attempt to muse upon the present scenario of explosion of numbers in the field of education beyond the secondary stage seeks to underline the need of saving higher education from the onslaught of the utilitarians. Probably it was in such a frame of mind that in the context of controversy of 'pure' versus 'applied' mathematics, the noted mathematician G.H. Hardy proposed a toast to the health of pure mathematics, saying, "May it remain useless for ever". All of us are here reaping the fruits of development in this "useless" discipline! The rambling thoughts should raise issues for further discussion, such as the following: Should not a majority of colleges and universities be converted into institutions of tertiary education imparting skills and training in vocations and professions? How are the remaining institutions, claiming dedication to the cause of higher education, going to be accreditated and funded? Could there be any pre-determined procedure and stage of entry into such institutions analogous to the arithmetic of 10+2+3+2 and could there be any kind of prescribed equivalence of degrees in different faculties from this point of view? How should respectable exits be provided for those who happen to join the institutions of higher education without leaving their material ambitions behind? ☐

Electronic Publishing and its Impact on Libraries

Y. Nagi Reddy*

Introduction

History of man on earth is the history of knowledge. Right from the primitive society till today there has always been a constant social pressure as well as an urge to find out something new i.e. exploring the possibilities of the unknown. Quite a major part of our knowledge today has been the result of social needs, social forces and human urges. This owes its origin, not only to the need for food, shelter and clothing but also a plethora of social interactions. Thus society has always remained a vital force behind the emergence and development of new aspects of knowledge. From the beginning man started using his mental faculties in expanding the horizons of knowledge of search and research either for necessities or comforts or luxuries of life.

Publishing industry in the world also developed due to the man's urge to record his concepts of the world, about him and his reactions to them. In the beginning he used hard surfaces like rocks, clay, bones, parchment, vellum, leaves and papyrus for recording. The collection of such records led to the concept of library and in modern terms, Information Systems.

The technological inventions, viz. (1) Paper, (2) Printing Press, (3) Photo filming, and (4) Computers, have revolutionised the publishing industry and Library services. They have changed the concept of Library as store house of human knowledge to Information centres which provides right information to right person at the right time.

(1) Paper Industry

The official credit for inventing paper belongs to Ts'ai Lun in 105 A.D. He produced paper from old rags, hemp, tree bark and fish nets. Slowly the art of paper making has spread to all over the world. The first paper mill in European Continent was in Catalonia, established before 1100 A.D. in Xativa. By 14th Century paper mills were established all over the world. The earlier writings were slowly copied down on the paper and the libraries started preserving these collections.

(2) Printing Press

During 1440-1450 Johnnes Gutenberg conceived the idea of printing by moveable types. He completed printing of 42 line Bible before August, 1456. Though there was Korean Printing before his invention, Gutenberg excelled the East Asian technology with his devices for the matrix, for the casting of single letters and the press itself were basic aspects of his invention. This invention though it was not directly concerned with libraries, it caused enormous impact on the libraries, library science, library services, library education and librarians.

The printed matter on paper, whatever may be the form—book, periodical or pamphlet, has become the most convenient and extensively used media till date for communication, not only for scientific and technical information but also for rhetoric ideas. According to one estimate 10 million documents are being published every year all over the world and according to International Serials Data System (ISDS, Paris) 1 lakh periodicals with more than 1 million articles are being published every year. Thus the invention of printing press revolutionised the publishing industry. This exponential growth of information caused great pressure on librarians in acquiring, organising and preserving the information sources. In order to overcome this problem, scientists and librarians started applying technical developments of other areas in information field.

(3) Photo-filming

(a) Microforms of Documents

By applying photographic technology Eugene B. Power in 1930 developed the method of Photo-filming the documents and by 1940 it was being widely used in publishing industry. The initial effort to film rare and deteriorating materials were given tremendous impetus by World War II with its wholesale destruction of libraries, archives and private collections. Microfilms and Microfiche are the two widely used media. The microfiche having the standard size 105 mm × 145 mm has the storage capacity of 98 images. The Ultrafiche can store 3000 pages.

Unlike paper documents microforms are system dependent media. The use of microform as a communication or storage medium necessitates the existence of micrographic system and two transformations associated with the information transfer from the source to the user.

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* *Assistant Librarian, Indira Gandhi Memorial Library, University of Hyderabad, Central University P.O., Hyderabad-500 134.*

The microfilming technology has brought the following advantages for libraries: space, storage and security, economy of filing, ease and economy of copying, economy of distribution, economy of file update, retrieval speed, speed of recording and its economy, and finally, organisational advantages.

Now a days microforms are being produced with the help of computers (COM). This process is also similar to microfilming but with the following differences. Instead of camera which microfilms a document, a Computer Output Microfilm Recorder which microfilms an electro optical display of data used and the processing exposed microfilms can be an integral part of the COM recording.

(b) Xerox Machines

Photofilming technology on the other side led to the invention of Xerox machines and since 1950 information centres are using them for document delivery.

(4) Computers

Like printing press the invention of computer, especially microcomputers, and its application to handle information has brought another revolution in publishing industry and library science. Charles Babbage first conceived the idea of computers and in 1944 Howard Aiken built a computer at Harvard University. By 1960 computers occupied the market in large scale. Because on its speed, accuracy, capacity to handle voluminous data and enormous storage capabilities of information, librarians and publishers have started using computers in information handling.

The Library of Congress with its projects MARC I and MARC II in 1960 and 1965 respectively, started using computers for its bibliographic control and transfer. The success of Library of Congress in applying computers for information transfer led to the application of computers in other areas like acquisition, organisation, preparation of indexes and information retrieval. In 1965, MEDLARS Database, first of its kind of National Library of Medicine was made widely available with information on machine readable files of possible utility in the provision of information services. Then came the INIS (1971) and AGRIS (1972) databases.

As a result of computer technology, new forms of documents such as magnetic tapes, discs, floppy discs, video discs and drums came into existence with enormous information storage capacities. Thus upto 54000 pages can be printed on each side of the magnetic disc. 300 pages books could be encoded in each centimeter of a magnetic tape.

Soon publishers began to use computers to support the production of directories, indexes and other publications. These databases have had a profound impact on librarianship and transformed both library user services and operations. Today there are over 3000 databases which offer a variety of information and services to users in hundreds of different subject areas. Two types of database i.e. reference databases (Bibliographic) and source databases (Text/numeric databases) are more common today, and many publishers are creating online versions of their traditional print publications. DIALOG, ORBIT, BRS and Mead Data Central are the famous Database vendors.

Modern Trends

A number of modern trends in the electronic information industry will have significant impact on libraries and information centres.

(a) CD-ROM: Major changes in formats and distribution patterns are developing as the entire industry prepares for a shift from online access to optical disc technology. This development is due to two complementary trends: (a) a rapidly increasing number of CD-ROM products, and (2) a growing base of installed microcomputers that can be used for both online and CD-ROM access to databases. As the installed base of CD-ROM equipment grows online vendors and database producers will offer more databases in the CD-ROM format which will in turn help libraries to justify the cost of the equipment. Jukebox players can handle several CD-ROM and networks of CD-ROM work stations will also enhance marketability of CD-ROM publications.

Bowker Electronic publishing provides several alternatives for acquiring CD-ROM players for their Books in Print plus CD-ROM product. H.W. Wilson Co. as an IBM Distributor has developed its own WILSON DISC work station.

(b) Demand: In 1982, the Library of Congress announced a new system of xerox called Demand which will store 5.5 million card images and reproduce them in fascimile using high resolution laser printing.

(c) Hologram and Steriogram Printing: In 1983 this method was developed by Holographics Institute of Britain with the help of Laser beams, which can print voluminous information on 35 mm film.

(d) Image Easy File (1988): IN USA, Scan Optics Institute has recently developed a machine called Image Easy File. By digital imaging method this machine can print 40,000 pages on magnetic tape and the required information can be retrieved with the help of computers.

(e) Electronic Beams: Very recently in 1988, scientists in University of Liverpool have developed an electron beam which can produce letters small enough to write the entire 30 volumes of Encyclopaedia Britannica on the head of a pin. An electron microscope transmits a beam of highly charged sub-atomic particles capable of drilling millions of ultrafine holes through certain

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INFORMATION—BECOMING INFORMED

K. Neelakantan*

A. Srimurugan**

Information is a human product and is fundamental to communication process. It promotes both interapersonal and interpersonal communication leading to human culture and civilization. It is commonly accepted that information is derived from experience, observation, interaction and reading. This concept of information, though a very common term, has been used and misused frequently. Hence a precise definition of the term will be more meaningful if provided here. According to Weisman, "Information is that which adds to, changes, or repeats a representation of what is known or believed to be known."[1] This definition is of course, beyond any controversy. But yet another definition by Fairthorne is not only attractive but also comprehensive. He states that, "Information is not stuff but a process. It is the process of becoming informed."[2] The definition given by Fairthorne is intellectually convincing. The same idea is reflected in the objectives and implications of Ranganathan's First Law, "Books are for use"[3], later published "Information is for use". Effective and continuous use of information has promoted world civilizations is a grandfather's statement. Information was and has been the causative factor for the history and development of anything in this universe.

Change—The Permanent Factor

The moment information was identified to be omnipotent, changes have come at an everfaster pace. Change has become imminent. When a Hindu Mahan was asked what was the permanent thing on earth, he answered aptly that "change is the only permanent thing on earth". What a beautiful, meaningful and philosophic an answer! This change can be caused by information only. Such is the power and value of information in modern societies that the concept has developed into information industry and information technology. A corroborating support is evidenced in a statement given by Baker, "The information industry probably had an output worldwide of over to 75 billion in 1982, and is growing at about 12% per year. At this rate of growth, the information industry will be the main source of the world's economic growth over the next 25 years"[4]. This is a clear indication of the trend that man is primarily after information. The primitive man was hunting animals for his survival while modern man is on the hunt for information.

Human Quest for Information

By nature man has been a curiosity minded creature. This inquisitiveness in him has led to innumerable interactions with his environment in a non-physical form. The resulting factor is information over a process of generation and regeneration. The never ending cycle of information generation and regeneration has led to information explosion.

In a wide range of forms—both physical and inner, information has been creating a deluge. The situation gets more and more complicated fundamentally due to the human quest for information. The more commercial trend today has converted information into a commodity. Until very recently, information was output. It was read in various forms of documents. Now it has become an input, raw material as important as any other commodity like coal, steel and petroleum. Hence information has become a commodity. It should find a market.

Library—An Information Market

Though information in general may be available everywhere, a specific place, which collects, stores, preserves in order to disseminate information is the library.

Library can be called an information market. A library user is a consumer of information that forms the major commodity of transaction. Though the information market situations and the commercial real market situations differ, the theories regarding consumers' behavior of commercial markets resemble that of users in libraries partly if not on the whole, as opinions of human beings, mass media advertisements and behavior, the same elements influence a library user also in the form of teachers, co-students, published reports etc.

Man uses a lot of things in his day to day life. Each man has his own set of requirements according to his way of life that he has designed. Though the commodities may be the same, the manner of procurement differs

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* *Assistant Librarian,*
Tamilnadu Agricultural University,
Coimbatore-641 003.

** *Lecturer,*
Department of Library and Information Science,
Madurai Kamaraj University,
Madurai-625 021.

from man to man. Procurement of commodities, though considered to be a major economic activity, involves psychology to a larger extent. Commercial firms choose this psychological factor study and then convince a majority of individuals with their products. All such efforts of commercial firms to attract buyers are expenses on advertisements by way of selling-cost. Invariably all the commercial firms study the concept of consumer behavior to their advantage. It is this consumer behavior that many a time shape not only optimistic marketing probabilities but also the design and structure of product.

Information-System Approach

User is the target of all production systems both service and manufacturing in nature. Library is one of the service production systems in a society. Information is the means as well as the end product in a library system. User is the target at whom all the library services are aimed. Users and documents form the parameters of any library systems.

In any open system, a consumer acts or reacts to the availability or non-availability of a commodity. On each occasion while procuring a commodity he designs his own alternative spontaneously depending upon the extent of his knowledge about the market. By approaching a number of shopkeepers, he collects information, develops and updates his knowledge about commodities he requires. The market and the society do not pose so much complications as in that of information markets or library systems. A layman with his efficiency is able to manage his transactions in a market comparatively easier than a scholar in a library system.

Well Begun is Half Done

'All's well that ends well' is a very popular title among Shakespeare's works. Quiet contrarily in a library all is well if it starts well. It is a well known fact that any good research investigation starts as well as ends with a good bibliography. In between a good start and a happy ending in a research investigation, varied forms of reading materials are involved in the promotion of R & D. Actually the scene is polluted many a time with a large quantum of literature. All the required information of an individual can never be obtained from a single library. Even if a majority of the information requirements is available from a library under one roof, the same set of information is in varied forms of literature such as conventional documents, non-conventional documents, and meta documents. Hence a reader is at his free will and freedom of choice either in fixing up the group of libraries or form of documents to obtain his information. The spectrum of information and the sovereign power to choose result in the varied behavior among users. The sociological foundations of libraries to certain extent shape the users in their behavior, resulting patterns. □

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Electronic Publishing and its Impact on Libraries

(Contd. from page 7)

materials. Cutting holes roughly the size of an atom in materials such as aluminium oxide could enable information to be stored at a density of 1000 times greater than in the latest computer storage device. It is possible to write one million lines side by side in the width of a pencil line.

(f) Expert Systems & Gateways: A major problem with computer based information retrieval is that, only a fraction of the database and search results can be displayed at any one time. The expert systems attempt to model the human mind and eye which can survey contents pages, shelves full of books or files of documents for relevant information.

A gateway is simply a portal from one computer to another. This system seek to respond to three increasingly compelling needs (1) the need for a common command language to simplify searching, (2) the need for centralised access to multiple databases, and (3) the need to reduce the record keeping paper work and contracts associated with maintaining separate subscriptions to different vendor services.

Conclusion

The impact of electronic publishing on information systems and services are enormous. Due to these trends, in future information will be available only on minutest form that can be stored or retrieved by only sophisticated machinery which automatically replaces the human intervention. This will be a big challenge for libraries and librarians to mould the present systems to suit these latest trends. If this trend still continued by 2000 A.D. as Lancaster puts it "paperless information systems" will automatically replace present information system based on printed documents.

Thus electronic publishing in library and information service seems destined to play a continual game of catch up with information providers in the field applying new techniques and technologies to the professional literature well after they have been applied to the information resources of other fields. □

CABE RECONSTITUTED

The Central Advisory Board of Education (CABE) is the highest advisory body to advise the Central and State Governments in the field of education. It provides a forum for arriving at a consensus on issues relating to educational and cultural development.

The functions of CABE would be:

(a) to review the progress of education from time to time;

(b) to appraise the extent and manner in which the education policy has been implemented by the Central and State Governments, and other concerned agencies, and to give appropriate advice in the matter;

(c) to advise regarding coordination between the Central and State Governments/UT Administrations, State Governments and non-governmental agencies for educational development in accordance with the education policy; and

(d) to advise, suo moto, or on a reference made to it by the Central Government or any State Government or a Union Territory Administration or any educational question.

For the discharge of these functions, the Board may (i) call for information and comments from any Government institution, any other organisation or any individual; (ii) appoint committees or groups comprising members of CABE and/or others as may be necessary; and (iii) commission, through Government or any other agency, studies, research or reports on any specific issue requiring attention of the Board of its committees or groups.

The Union Government has reconstituted the Central Advisory Board of Education (CABE) with the Human Resource Development Minister as its Chairman. The Minister of State for Human Resource Development will be the Vice-Chairman.

Formed as the apex body to advise the Central and the State governments in the field of education, the Board will also have six other representatives of the Government of India including the Ministers of Information and Broadcasting, Labour and Welfare, the Minister of State for Science and Technology, the Minister of State for Health and Family Welfare, the Deputy Minister in the Department of Youth Affairs and Sports, Member (Education) in the Planning Commission.

Representatives of State Governments and Union Territories will include the Ministers incharge of Education in each State Government and Lt. Governors or Ministers incharge of education in each UT administration.

Among the elected members, there will be four members of Parliament from the Lok Sabha and two members from the Rajya Sabha. There will also be a member each from the Association of Indian Universities, the All India Council for Technical Education, the Medical Council of India, and the Central Council of Indian Medicine.

In addition, there would be 10 ex-officio members to the CABE consisting of the Chairman, UGC, Director-General, ICAR, Chairman, Central Social Welfare Board, Director, NIEPA, Director, NCERT, Chairman, CBSE, Chairman, Indian Council of Historical Research, Chairman, Indian Council for Social Sciences Research, Chairman, Indian Council for Philosophical Research, and Director-General, National Literacy Mission.

Among the 30 nominated members of the reconstituted CABE are:

(i) Dr. M.S. Adiseshiah,
Chairman,
Madras Institute of Development Study,
Madras;

(ii) Dr. Anandalakshmi,
Lady Irwin College,
New Delhi;

(iii) Shri Prem Bhai,
Banvasi Seva Ashram,
Govindpur, District Mirzapur
(Uttar Pradesh);

(iv) Shri Nikhil Chakraborty,
Editor, Main Stream,
New Delhi;

(v) Dr. K.L. Chopra,
Director,
Indian Institute of Technology,
Kharagpur;

(vi) Dr. Jyoti Bhai Desai,
Gandhi Vidyapith, Vedachhi,
District Surat (Gujarat);

(vii) Dr. A. Gnanam,
Director,
Centre for Molecular Biology,
Madurai Kamaraj University,
Madurai;

(viii) Dr. Syed Hasan,
Director, Insan School,
Shiksha Nagar,
District Purnea (Bihar);

(ix) Dr. Radhika Herzburgur,
Director,
Rishi Valley Education Centre,
Krishnamurti Foundation India
Rishi Valley,
District Chittoor
(Andhra Pradesh);

(x) Prof. Izhar Hussain, Aligarh Muslim University, Aligarh;

(xi) Dr. V. Kabra, Director, Indian Institute of Rural Workers, Aurangabad;

(xii) Prof. D.S. Kothari, Former Chairman UGC, Delhi;

(xiii) Shri Komal Kothari, Jodhpur;

(xiv) Smt. Jagannathan Krishnammal, Sarvodaya Worker, Secretary, Land for Tiller's Freedom (LAFTI), Kilvelur, Tanjore Distt (Tamil Nadu)

(xv) Professor Mrinal Miri, Department of Philosophy N.E. Hill University, Shillong;

(xvi) Dr. Ram Dayal Munda, Ex. Vice-Chancellor, Ranchi University;

(xvii) Dr. M.P. Parameswaran, Bhartiya Gyan Vigyan Samiti, Kerala Sastra Sahitya Parishad, Trivandrum;

(xviii) Shri Hari Vallabha Parik, Anand Niketan Ashram, P O. Rangpur (Kavant), District Baroda;

(xix) Acharya Ramamurti Chairman, NPE – Review Committee, Khadigramodyog Ashram, Jamui, Distt. Monghyr (Bihar);

(xx) Prof. G.S. Randhawa, Vice-Chancellor, Guru Nanak Dev University Amritsar;

(xxi) Dr. (Mrs.) Suman Sahai, New Delhi;

(xxii) Dr. Kartikeya Sarabhai, Centre for Environment Education, Thalej Tehra, Ahmedabad;

(xxiii) Dr. Naseem Ahmed Shah, Former Principal, Medical College, Srinagar;

(xxiv) Dr. (Mrs.) Annapurna Shukla, Banaras Hindu University, Varanasi;

(xxv) Shri M.P. Singh, Meerut Cantt,

(xxvi) Smt. Sarva Sridevi, Secunderabad;

(xxvii) Dr. M.S. Swaminathan, Madras;

(xxviii) Shri Habid Tanvir, Director, Naya Theatre, New Delhi;

(xxix) Dr. (Smt.) Jyoti H. Trivedi, Former Vice-Chancellor, SNDT Women's University Bombay;

(xxx) Shri B.C. Zaveri, Bombay.

In addition, there will be 13 permanent invitees which include:

(i) Secretary, Department of Women & Child Development

(ii) Secretary, Department of Youth Affairs & Sports

(iii) Secretary, Department of Culture

(iv) Secretary, Department of Science and Technology

(v) Secretary, Ministry of Welfare

(vi) Secretary, Planning Commission

(vii) Secretary, Department of Labour

(viii) Secretary, Ministry of Industrial Development

(ix) Chairman, Electronics Commission

(x) Additional Secretary, Department of Education

(xi) Educational Adviser (Technical), Deptt. of Education

(xii) Adviser (Education), Planning Commission

(xiii) Director, Directorate of Adult Education.

Union Education Secretary will act as the Member Secretary of the CABE.

The tenure of the office of the members of the CABE, other than ex-officio members shall be three years. The Board will meet at least once every year and there shall not be a gap of more than two years between the two consecutive meetings of the Board.

Symposium on National Integration

Mr. M. Narasimha Reddy, Minister for Municipal Administration, Law & Courts, Govt. of Andhra Pradesh, recently inaugurated a symposium on 'National Integration and Communal Harmony' organised by the Centre for Adult & Continuing Education and Extension Activities of Kakatiya University. In his address he observed that India which had a hoary past was today beset with communal disharmony, disintegration, hatred and violence, destroying the very fabric of society. Unless people realised the need for peaceful co-existence reposing confidence in one another by adopting the principle of 'live and let live', this country had no future, the Minister averred.

Mr. Narsimha Reddy called upon the people of all religions, castes, creeds and communities to sink their differences and strive for a united India by maintaining communal harmony.

Presiding over the function, Prof. Jafar Nizam, Vice-Chancellor of Kakatiya University said, love and tolerance were the two cardinal principles which shaped the edifice of national integration in a country like ours with heterogenous factors.

Third World Academy Awards

Prof. Govind Swarup and Prof. Sukhdev have won the Third World Academy of Sciences (TWAS) awards in basic sciences for the year 1988. Prof. Swarup of the Tata Institute of Fundamental Research in Bombay has been named for his contributions in the field of radio astronomy and cosmology and Prof. Sukhdev for his work on natural products chemistry.

New Courses at GND Varsity

The Guru Nanak Dev University has introduced courses in sugar technology, applied physics and applied chemistry.

Courses in mass communication, management and applied economics would be introduced at the regional centre at Jalandhar. Land for the building of the regional centre has been acquired and Rs. 13.5 crore would be spent on it.

This was recently disclosed by Shri G.S. Randhawa, Vice-Chancellor of the University.

Bhasin Awards Presented

Ten scientists have been presented the Om Prakash Bhasin Award for their outstanding contribution in the field of science and technology.

The awards which carry Rs. 50,000 in cash, a citation and a memento each were presented by Finance Minister Madhu Dandavate.

Speaking on the occasion Prof. Dandavate urged the scientists to take advanced technology to the fields and communication for bridging the gap between the educated and the illiterate ruralities.

The awardees are Prof. Sohan Singh Parihar (Punjab Agricultural University, Ludhiana), Dr. T.N. Khoshoo (Tata Energy Research Institute), Prof. Vishwanathan Sasisekharan (Indian Institute of Science, Bangalore), Prof. Sipra Guha Mukherjee (School of Life Sciences, JNU, New Delhi), Dr. N. Seshagiri (Director General of National Informatic Centre), Dr. V.S. Arunachalam (Adviser to Defence Minister), Prof. Kasturi L. Chopra (Indian Institute of Technology, Kharagpur), Dr. A.N. Malaviya (Professor of Medicines, AIIMS), Mr. J.C. Bhattacharya (Director Flight Systems, DRDL Hyderabad) and Mr. P. Banerji (Head, Inertial Guidance and Navigation Group, DRDL, Hyderabad).

Shyam Lal Award for Sc. & Tech.

The Shyam Lal Charitable Trust has instituted the Shyam Lal Gupta Award for Science and Technology in memory of Lala Shyam Lal Gupta, the founder and managing director of S. Chand and Company. The award will be a biennial feature with the winner being awarded Rs. 2 lakhs and a citation.

The first award will be given in 1992, i.e. the 78th birth anniversary of Lala Shyam Lal Gupta. It will be given on published works and is open to any living person below the age of 55. The person should be an Indian national, whose works are published in learned periodicals in either Hindi or English. They should be written on the subjects of science and technology, either theoretical or applied.

News from Agril. Varsities

HAU—Towards New Peaks of Excellence

Since its inception the Haryana Agricultural University has released more than 95 high yielding varieties of various crops, including fruits, vegetables and aromatic plants. Its research and extension support to the state development departments has enabled the state of Haryana to come out from the stage of deficit state to a surplus state. Not only has it established close linkage with the state development departments for the purpose of transfer of new technologies generated, it has also established close research linkages with various sister universities, institutions both within and outside the country.

The university is actively engaged in the field of agricultural education and research. The existing undergraduate and postgraduate curricula are being revised to eliminate avoidable duplication and introduce subject matters related to the recent advances in different disciplines of learning. In view of the emerging concept of agriculture as an industry, new course curricula in agro-business are being introduced. Efforts will be made to initiate a B.Sc. (Horticulture) programme from the next academic session.

To improve teacher-taught relationship the advisory system is being strengthened. In order to increase the teacher-student contact the existing course curricula have been revised to 3 to 5 credit courses. Efforts are being made to make the course curricula more practical oriented.

The university has developed a very strong research base, including the establishment of Regional Research Stations. Currently, more than 300 research schemes are in operation at the main campus as well as outstations. The University Variety Evaluation Committee has identified six newly developed varieties (2 of paddy, 3 of sugarcane and one of cotton) this year. Among the gram varieties evolved by the scientists, Gaurav, Haryana Chana 1 and recently developed H86-143 are very popular among the farmers of J & K, Himachal Pradesh, UP, Rajasthan and Maharashtra.

In order to give impetus and meet emerging challenges as well as to encourage willing scientists to contribute their maximum, multi-disciplinary teams of compatible scientists with specific targets are being constituted in different crops as well as applied disciplines. Dryland farming, farming systems and diversification of agriculture for maximising the returns are current concerns of our research programme.

In addition to the production-oriented applied research, the university is also giving due emphasis on research in frontier areas viz. bio-technology as applied to enhancing agriculture and livestock production. Bio-technology research is currently in progress in the Departments of Botany, Genetics, Bio-chemistry, Microbiology, Animal Production, Physiology, Gynaecology, etc. Many new research projects in these areas are expected to be launched under the aegis of the Government of India, Department of Bio-Technology, ICAR and other financing agencies.

Transfer of Technology is one of the important mandated activity of the university. In order to enhance the rate of transfer of technology and make perceptible impact the university has recently adopted a whole-village approach for an overall improvement. Moreover, to encourage the university scientists, teachers and extension specialists, an incentive scheme has recently been introduced wherein an individual or a group of scientists may submit a specific project of transferring a particular technology. In order to improve their efficiency they will be given the required freedom of working and if the programme is successfully executed they will be suitably recognised/rewarded.

Concerted efforts have been initiated to upgrade the university capabilities in extension activities through getting the KGKs upgraded to KVKs through the funds of ICAR.

News from UGC

Countrywide Classroom Programme

Between 8th November to 15th November, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

8.11.90

"COBOL – 7: Data Division – I"

"The Sun's Hidden Treasure"

"Art of Translation"

9.11.90

"Algebraic Structure – I: Theory of Sets"

"Made Women's Mela"

"Bio-diversity of India"

10.11.90

"Consumer Protection – I: An Introduction"

"Modern Paintings – An Introduction"

11.11.90

No Telecast

12.11.90

"Classical Mechanics – 7: Galilean Invariance"

"Theory of Games – I: Strategy Formulation"

"Towards the Mystries of Life"

13.11.90

"The Distribution of Molecular Speeds"

"Teaching & Learning"

"Early Detection and Rehabilitation of Cancer"

14.11.90

"Vibration – II"

"Child in Margin (Special Programme)"

"The Gene Story"

15.11.90

"COBOL – 8: Data Division – 2"

"Tragedy – Aristotle to Brecht – I"

2nd Transmission
4.00 p.m. to 5.00 p.m.

8.11.90

"Introduction to Micro Computers"

"Hydrological Cycle"

"Is Tense System in English a Problem"

9.11.90

"Chinese Postman Problem – II : A Mathematical Approach"

"Sanskritisation – II"

"Trees of Hope"

10.11.90

"Rasa Ranjita – Understanding Indian Dance – I: Kathakali – I"

"Looking at Paintings – I"

"Hockey"

11.11.90

No Telecast

12.11.90

"Classical Mechanics – I: Galileo's Principle of Relativity – A"

"Appropriate Technology – I"

"Earthworms – IV"

13.11.90

"The Elements of Group IV and Their Compound"

"A Vision of Tomorrow"

14.11.90

"Efficient Structural Forms – III: The Arch"

"Kiradu: An Oasis in the Desert"

"National Marine Parks of America"

15.11.90

"COBOL – I: Introduction"

"A Discussion on the Satire of Jonathan Swift (Fulliver's Travels)"

Service Benefits for Awardee Academics

The University Grants Commission (UGC) has advised the universities to allow those academics who get special awards like the Bhatnagar Fellowship, the Indian National Science Academy (INSA)/the University Grants Commission (UGC) Professorship, the National Professorship, etc. the benefits of continuity of service in their parent organisations. These award winning academics will also continue to have all positions and privileges of the University professorship and will continue to receive all benefits from the respective university including continuity in service, housing accommodation, etc. They will also continue to participate in full in the university activities as before without any change due to such awards and assignments.

The Commission has further mentioned that the universities may utilize temporarily the post held by the awardee academician in accordance with the provision of the schemes, university regulation, etc.

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE
PILANI (RAJASTHAN) 333031

Faculty Recruitment Advertisement No. FR/2/90

Applications are invited for faculty positions at various levels in the discipline of: Chemical, Civil, Electrical & Electronics, Microelectronics, and Mechanical Engineering; Computer Science, Instrumentation, Pharmacy, Management; Biosciences, Chemistry, Economics, Mathematics, Physics, Science & Technology Development, Museum Studies, Engineering Technology, Information Systems; English, and Humanities. Positions (full-time/part-time) are also available for the Institute's off-campus operations in Bombay, Calcutta, Delhi, Hyderabad, Madras etc. Candidates must possess normally a Ph.D. In case of professional disciplines Master's or Bachelor's degree holders will also be considered.

A free booklet "Introducing BITS to Prospective Faculty" giving details can be obtained on request by sending a stamped (Rs. 6.00) self-addressed envelope (30 × 25 cm) marked FR/2/90.

There is no last date for application. This advertisement will be valid till June 1991. Applications received will be reviewed periodically and offers made accordingly.

PILANI
October, 1990

REGISTRAR

Book Review

A Mixed Fare

M. Mukhopadhyay*

Inayat Khan. Teaching at a Distance. Delhi, Amar Prakashan, 1989. pp. 167, Rs. 150/-

Despite distance education has been in vogue in the form of correspondence education right since 1962, as a major area of academic study and debate, this is comparative a recent development. Over the years as many as 34 university directorates and seven institutions at the school level in different parts of the country have been offering programmes through distance education catering to more than four lakh students at the higher education level and little above one lakh at the school level. Andhra Pradesh Open University was one of the early beginnings in the form of open university. But the real phase and recognisable developments started with establishment of Indira Gandhi National Open University (IGNOU). Planning and management of distance education as a major area of study and training was initiated by National Institute of Educational Planning and Administration (NIEPA) which regularly brought together all the directors of distance education from various universities. Subsequently, NIEPA also promoted a series of research studies on the planning and management of distance education. Before such organised effort of NIEPA, research on distance education was almost single handedly contributed by Prof. Ruddar Dutt and by a few other scholars for doctoral studies. Before this visible movement, distance education institutes clubbed themselves and met under the auspices of Indian Council of Distance Education (ICDE) for several years. The Indian literature on distance education is largely the outcome of the seminars in such ICDE conferences and/or anthologies by various scholars with a few exceptions of authored volumes on the subject. Inayat Khan's book, "Teaching at a Distance" is in the category of an anthology—a collection of papers.

The book contains 14 chapters classified into five parts. Part one deals with organisation and development of distance education. In four chapters, it deals with the history of development of correspondence education in India as well as the need for non-conventional courses on distance education. The other two chapters by Holmberg and Smith provide coverage on the organisation and models of correspondence education.

Part two provides coverage on use of technology in distance education primarily comprising a case study of IGNOU on the use of audio-visual aids for teaching English and a rather short note by Prof. Mulay who outlines a few of the techniques.

Preparation of instructional material in the part three brings a case from British Open University on the procedure and another paper from Bakshish Singh provides the theoretical concepts behind material preparation. Part four on research on distance education has four studies. The highlight of this section is the studies by Baath and Khan on discontinuation and dropout of correspondence students.

Last section deals with faculty development for distance education. The papers in this are largely an argument in favour of faculty development rather than on the method of developing the faculty.

Scanning through the book, one gets a mixed feeling. On one hand it is useful that it brings together 14 writings in a field where there is not much literature available.

Beyond this argument, one faces quite a bit of difficulty. Firstly, articles are rather disjointed and were presented in conferences in various years. For example, three papers each were presented way back in 1978 and 1979—more than ten years ago. Except two papers, all others belong to 1981-82 and 1985-86. This time lag is disappointing since there have been many more developments. New books have come up from Holmberg or Smith which bring their ideas of late 80's whereas this book presents data and information of the 70's. Similarly, Ruddar Dutt's paper provides data only upto 1978 whereas his own papers—atleast three of them provide data upto 1989. It may not be necessary to elaborate this any further. But it is important to note that from this angle the chapters are of historical importance rather than of any current value.

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* *Sr. Fellow and Head, Educational Administration Unit, National Institute of Educational Planning and Administration, 17-B, Sri Aurobindo Marg, New Delhi-110016.*

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for awards of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department of Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A list of Research Scholars registered for Doctoral Degrees in Indian Universities.

SOCIAL SCIENCES

Library & Information Science

1. Chaturvedi, Kiran. *Communication of agricultural information between research scientists, extension personnel and farmers in India.* BHU. Dr. Y.P. Dubey, Department of Library and Information Science, Banaras Hindu University, Varanasi.

2. Ojha, Ram Awatar. *Information seeking behaviour and the perception of information channels by journalists of selected national newspapers of India.* BHU. Dr. Y.P. Dubey, Department of Library and Information Science, Banaras Hindu University, Varanasi.

3. Sukumaran Nair, N. *An investigation into the structure, organisation and working of public libraries in Kerala.* Kerala. Dr. M. Bavakutty, University Librarian, Calicut University, Calicut.

4. Yadav, Hira Lal. *Uttar Pradesh ke sangrahalaya prachar aur jan sambandh: Ek vivechanatmak adhyayan.* BHU. Dr. S.K. Srivastava, Department of Bharat Kala Bhawan, Banaras Hindu University, Varanasi.

Psychology

1. Rao Renuka. *Normative study and characteristics of personality of professionals: A cross cultural study.* Devi Ahilya, Dr. (Kum) Saroj Kothari, Asstt. Prof., Department of Psychology, Govt. Arts and Commerce College, Indore.

2. Singh, Gyan Shankar. *Generalization of arithmetic skills in educable mentally retarded with the hope of behaviour modification technique.* BHU. Dr. (Mrs) S.S. Kaushik, Department of Psychology, Banaras Hindu University, Varanasi.

Sociology

1. Choubey, Mithilesh Kumar. *Kisanon ka samaj vaigyanik adhyayan.* BHU. Prof. H.C. Srivastava, Department of Sociology, Banaras Hindu University, Varanasi.

2. Manju Kumari. *Badalate parvesh mein Muslim mahilayon ka samajik adhyayan.* BHU. Dr. J.N. Singh, Department of Sociology, Banaras Hindu University, Varanasi.

3. Pandey, Tanuja. *A study of private and public sector.* BHU. Dr. Manju Biswas, Department of Sociology, Banaras Hindu University, Varanasi.

4. Rai, Manoj Kumar. *Majdoor bunkar kee samajik evam arthik paristhiti: Mau Cotton Mill per adharit samaj vaigyanik adhyayan.* BHU. Dr. Sohan Ram Yadav, Department of Sociology, Banaras Hindu University, Varanasi.

5. Sanjay Kumar. *Street corner society in a traditional city, Varanasi.* BHU. Prof. H.C. Srivastava, Department of Sociology, Banaras Hindu University, Varanasi.

6. Singh, Reeta. *Jansankhya niyantran kee samasyayen.* BHU. Prof. H.C. Srivastava, Department of Sociology, Banaras Hindu University, Varanasi.

7. Singh, Tej Bahadur. *Vikassheel prashasan evam Rupagarh (Aramgarh) Jile ke Piyari Gaon per adharit samaj vaigyanik adhyayan.* BHU. Dr. J.K. Tiwary, Department of Sociology, Banaras Hindu University, Varanasi.

Political Science

1. Balachandran Pillai, P.G. *Political process in the co-operative sector: A study on the primary cooperative banks in Kerala.* Kerala. Dr. T. Varghese, Department of Politics, St. John's College, Anchal.

2. Marydase, Y. *Role of Church in Kerala politics since 1972.* Kerala. Dr. C.N. Somarajan, Raj Bhavan, Near Telephone Exchange, Kundara P.O., Quilon.

3. Tewari, Rama Shankar. *Nepal, Pakistan aur Bangladesh ke parasparik sambandhon kee vivechana, 1988 tak..* BHU. Prof. P.D. Kaushik, Department of Political Science, Banaras Hindu University, Varanasi.

Economics

1. Bharati, T. *Operational efficiency of nationalised commercial banks in India.* BHU. Dr. (Miss) Indu Jain, Department of Economics, Banaras Hindu University, Varanasi.

2. Bhavana, T. *Cropping pattern and income distribution in Kerala.* Kerala. Dr. K.N.S. Nair, Chief, Data Bank and Computer Division, State Planning Board, Pattom, Thiruvananthapuram.

3. Dhanalakshmi, S. *Economics of production in the informal section.* Kerala. Dr. S. Uma Devi, Department of Economics, University of Kerala, Kariavattom.

4. Dubey, Vinod Kumar. *A study of technological changes in agriculture in Kerakat Block of Jaunpur District, U.P.* BHU. Prof. D.K. Mishra, Department of Economics, Banaras Hindu University, Varanasi.

5. Dwivedi, Anil Kumar. *Poverty alleviation programmes in Bihar.* BHU. Dr. A.K. Jain, Department of Economics, Banaras Hindu University, Varanasi.

6. Hari Kumar, P. *Pricing policy of public sector enterprises in India.* BHU. Prof. D.K. Mishra, Department of Economics, Banaras Hindu University, Varanasi.

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14. Manorama Jyotsna. *Samkaleen chetna aur Hindi natak.* BHU. Dr. N. Rai, Department of Hindi, Banaras Hindu University, Varanasi.

15. Kashyap, Meera. *Hindi alochana aur Dr. Namvar Singh.* BHU. Dr. M.N. Rai, Department of Hindi, Banaras Hindu University, Varanasi.

16. Mishra, Devendra Kumar. *Surdas ke Bhramergeet mein vyanga vidhan.* BHU. Dr. S.N. Pandey, Department of Hindi, Banaras Hindu University, Varanasi.

17. Nagar, Arti. *Chhayavadi kavya aur uski sameeksha: Dr. Rameshwarlal Khandelwal Tarun ke vishesh sandarbh mein.* BHU. Dr. Nirmala Kumari Varshney, Department of Hindi, Banaras Hindu University, Varanasi.

18. Nagar, Rashmi, *Navam dashak kee Hindi kahani: Adhunikta ka sandarbha.* BHU. Dr. Nirmala Kumari Varshney, Department of Hindi, Banaras Hindu University, Varanasi.

19. Padmanabhan Nair, K.P. *A critical study of the political novels in Hindi and Malayalam.* Kerala. Dr. M.A. Karim, Publication Officer, Department of Publication, University of Kerala, Trivandrum.

20. Pandey, Anil Kumar. *Nayee kavita: Mithkeeya srijansheelta.* BHU. Dr. R.N. Shukla, Department of Hindi, Banaras Hindu University, Varanasi.

21. Pandey, Bandana. *Sapatakon kee kavita aur kavya bhasa.* BHU. Dr. Mangla Prasad, Department of Hindi, Banaras Hindu University, Varanasi.

22. Pandey, Birendra Kumar. *Adhunik rashtriya kavyadhara aur Makhanlal.* BHU. Dr. Shree Nivas Pandey, Department of Hindi, Banaras Hindu University, Varanasi.

23. Pandey, Mamata. *Hindi gadya parampara aur Rai Krishna Das: Kala sahitya aur sanskriti ke kshetra mein Rai Krishna Das Jee ka yogdan.* BHU. Dr. Pushpa Agrawal, Department of Hindi, Banaras Hindu University, Varanasi.

24. Pandey, Nand Kishore. *Kabir sahitya aur Kabir panthi sahitya.* BHU. Dr. Sukhdev Singh, Department of Hindi, Banaras Hindu University, Varanasi.

25. Pandey, Prabhakar. *Sathottar rajnaitik parivesh aur rajnaitik kavitayen.* BHU. Dr. Ibha Gupta, Department of Hindi, Banaras Hindu University, Varanasi.

[illegible]. Pandey, Rajeev Ranjan. *Prasad ke gadya sahitya mein yatharth bodh.* BHU. Dr. R.S. Rai, Department of Hindi, Banaras Hindu University, Varanasi.

27. Pradeep Kumar. *Muktibodh: Kavya sidhanta evam kavya prakriya.* BHU. Dr. R.N. Shukla, Department of Hindi, Banaras Hindu University, Varanasi.

28. Pratima Kumari. *Hindi navgeet: Vastu aur shilpa.* BHU. Dr. C.R. Yadav, Department of Hindi, Banaras Hindu University, Varanasi.

29. Rai, Anita. *Jaishankar Prasad ke sahitya mein swachchhandtavad evam yatharthavad ka dwandha.* BHU. Dr. Shivkaran Singh, Department of Hindi, Banaras Hindu University, Varanasi.

30. Rai, Usha. *Hindi kavya shastra mein kavi shiksha aur rasik shiksha.* BHU. Dr. R.S. Rai, Department of Hindi, Banaras Hindu University, Varanasi.

31. Ram Karan. *Naye kaviyon kee sameeksha dristi, 1950-80.* BHU. Dr. Shree Nivas Pandey, Department of Hindi, Banaras Hindu University, Varanasi.

32. Renu. *Adhunik sameeksha ko Dr. Nagendra ka awadan.* BHU. Dr. Pushpa Agrawal, Department of Hindi, Banaras Hindu University, Varanasi.

33. Sahay, Pravin. *Dhoomil ka kavya: Vastu aur shilp.* BHU. Dr. R.S. Rai, Department of Hindi, Banaras Hindu University, Varanasi.

34. Shah, Rashmi. *Samkaleen Hindi upanyaskar: Yathartha kee jatilata aur nav kalaroop.* BHU. Dr. Nirmala Kumari Varshney, Department of Hindi, Banaras Hindu University, Varanasi.

35. Sharma, Ramesh Chandra. *Adikalin sahitya ke sandarbha mein bhaktikal ka punarmulyankan.* BHU. Dr. S.N. Pandey, Department of Hindi. Banaras Hindu University, Varanasi.

36. Shashi. *Awadhi mein kriya pad rachna.* BHU. Sudhakar Singh, Department of Hindi, Banaras Hindu University, Varanasi.

37. Shastri, Geeta. *Chhayavadi kavita mein manavatavadi chetna.* BHU. Dr. Kumud Prabha Srivastava, Department of Hindi, Banaras Hindu University, Varanasi.

38. Shukla Ajai Kumar. *Acharya Ramchandra Shukla, Acharya Hazari Prasad Dwivedi, itihas drishti: Vastuvadi pariprekshya.* BHU. Dr. Ramkali Saraf, Department of Hindi, Banaras Hindu University, Varanasi.

39. Singh, Brij Nandan. *Kanhawat mein lok sanskriti.* BHU. Dr. Jamila Ali Zafari. Department of Hindi, Banaras Hindu University, Varanasi and Dr. Pushpa Agrawal, Department of Hindi, Banaras Hindu University, Varanasi.

40. Singh, Om Prakash. *Amrit Lal Nagar ke upanyason mein sanskritik swaroop.* BHU. Dr. Sudhakar Singh, Department of Hindi, Banaras Hindu University, Varanasi.

41. Singh, Pratima. *Hindi nibandh ke vikas mein Kashi ka yogdan.* BHU. Dr. N.N. Upadhyay, Department of Hindi, Banaras Hindu University, Varanasi. and Dr Pushpa Agrawal, Department of Hindi, Banaras Hindu University, Varanasi.

42. Singh, Tribhuvan Narayan. *Athven dashak ke upanyas: Vasik sanchetna.* BHU. Dr. Rajmani Sharma, Department of Hindi, Banaras Hindu University, Varanasi.

43. Surendra Prasad. *Bhojpuri bhasha ka Hindi ko yogdan: Kavita ke sandarbh mein.* BHU. Dr. Pushpa Agrawal, Department of Hindi, Banaras Hindu University, Varanasi.

44. Thomas, M.D. *Kabir sahitya aur Bible mein abhivyakta bhakti bhavana: Ek tulnatmak adhyayan.* BHU. Dr. S.S. Shukla, Department of Hindi, Banaras Hindu University, Varanasi.

45. Tripathi, Prabhat Kumar. *Agyeya kee kahaniyan: Samvedana evam shilpa.* BHU. Dr. R.S. Dubey, Department of Hindi, Banaras Hindu University, Varanasi.

46. Tripathi, Suchita. *Prasad sahitya mein antradwandh.* BHU. Dr. V. Mishra, Department of Hindi, Banaras Hindu University, Varanasi.

47. Ushakumari, K.P. *An analytical study of the cultural consciousness in romantic poetry.* Kerala. Dr. M.A. Karim, Publication Officer, Department of Publication, University of Kerala, Trivandrum.

Urdu

1. Ansari, Taiyab Ali Reza. *Imam Ahmad Reza: Hayat aur karnamen.* BHU. Dr. Qamar Jahan, Department of Urdu, Banaras Hindu University, Varanasi.

Bengali

1. Banerjee, Jambasi. *Bankim Chandrer upanyase lokjiban.* BHU. Prof. S.N. Das, Department of Bengali, Banaras Hindu University, Varanasi.

2. Chakravorty, Soma. *Bangla upanyase pratifalita musalman samaj chitra.* BHU. Prof. S.N. Das, Department of Bengali, Banaras Hindu University, Varanasi.

Malayalam

1. Jayachandran Nair, P.K. *Puthooram pattukal: A critical study.*

Kerala. Dr. V. Gangadharan Nair, Sub-Editor, Malayalam Lexicon, University of Kerala, Trivandrum.

2. Krishnan Nampoothiri, P.S. *Ramaraja Bahadur: A lexicological study.* Kerala. Dr. P. Somasekharan Nair, Department of Malayalam Lexicon. University of Kerala, Trivandrum.

3. Raveendran, G. *Bharatham Pattu: A lexicological study.* Kerala. Dr. V. Gangadharan Nair, Sub-Editor, Malayalam Lexicon. University of Kerala, Trivandrum.

Telegu

1. Satyanarayan Murthy, Kare. *Symbolism in modern Telugu poetry.* BHU. Dr. G. Trivikramaiah, Department of Telugu, Banaras Hindu University, Varanasi.

Geography

1. Dinesh Kumar. *Changes in agriculture in Belan Valley.* BHU. Dr. V.R. Singh, Department of Geography, Banaras Hindu University, Varanasi.

2. Dwivedi, Sudhakar. *Narayanpur vikaskhand, Janpad Mirzapur ka gramin rupantarn.* BHU. Dr. B. Dubey, Department of Geography, Banaras Hindu University, Varanasi.

3. Falguni, Amidha. *Women working population in Northern India with special reference of UP Himalayan.* BHU. Prof. V.R. Singh, Department of Geography, Banaras Hindu University, Varanasi.

4. Mishra, Arun Prabha. *Landform and human inhabitation: A study in Rajmahal Hills regions.* BHU. Dr. K.K. Dubey, Department of Geography, Banaras Hindu University, Varanasi.

5. Mishra, Ravi Shankar. *Human source of environmental pollution.* BHU. Dr. V.K. Kumar, Department of Geography, Banaras Hindu University, Varanasi.

6. Naresh Chandra. *Geomorphological investigation and ground water potentiality in Belan Valley.* BHU. Dr. S.P. Misra, Department of Geography, Banaras Hindu University Varanasi.

7. Pandey, Raghavendra. *A geomorphological study of Amar Kantak Upland.* BHU. Dr. M.B. Singh, Department of Geography, Banaras Hindu University, Varanasi.

8. Pandey, Shakti Nandan. *Hydromorphogeological investigation of Vindhyan Uplands, Mirzapur District.* BHU. Dr. S.P. Misra, Department of Geography, Banaras Hindu University, Varanasi.

9. Pathak, Vandana. *Gorakhpur aur Varanasi ke madhya rail parivahan mein parivartan: Parivahan bhugol mein ek adhyayan.* BHU. Dr. N. Kaushik, Department of Geography, Banaras Hindu University, Varanasi.

10. Rai, Ajay Kumar, *Morphological layout of Siwan with special reference to its recent development.* BHU. Dr. V.K. Kumra, Department of Geography, Banaras Hindu University, Varanasi.

11. Sharma, Bina. *Social facilities in small towns of Eastern UP: A geographical analysis.* BHU. Dr. R.B. Singh, Department of Geography, Banaras Hindu University, Varanasi.

12. Shiv Prasad. *Geographical study of Carpet Industries, Bhadohi Region.* BHU. Dr. M.B. Singh, Department of Geography, Banaras Hindu University, Varanasi.

13. Singh, Anil Kumar. *Bokaro Industrial Compelx: Its impact on regional development.* BHU. Dr. B.N. Singh, Department of Geography, Banaras Hindu University, Varanasi.

15. Singh, Archana. *Women working population in Delhi: A social geography.* BHU. Dr. N. Kaushik, Department of Geography, Banaras Hindu University, Varanasi.

16. Singh, Bipin Kumar. *Audyogik vikas evam paryavaran pradushan: Bokaro nagariya kshetra ka ek adhyayan.* BHU. Dr. R.Y. Singh, Department of Geography, Banaras Hindu University, Varanasi.

17. Singh, Rajendra Prasad. *Population geography of Rohtas District, Bihar.* BHU. Dr. N. Kaushik, Department of Geography, Banaras Hindu University, Varanasi.

18. Singh, Sarvesh Kumar. *A geographical analysis of population characteristics and family planning adaptation in Vidyapith Block, Varanasi.* BHU. Dr. M.B. Singh, Department of Geography, Banaras Hindu University, Varanasi.

19. Thakur, Swasti. *Landscape and images in the writings of Tulsi: A study in humanistic geography.* BHU. Dr. R.B.P. Singh, Department of Geography, Banaras Hindu University, Varanasi.

20. Tiwari, Amita. *Scheduled caste and scheduled tribes problems: A geographical study.* BHU. Dr. S.P. Mishra, Department of Geography, Banaras Hindu University, Varanasi.

History

1. Abdul Hasim, S. *A study of Tipu Sultan with special reference to Kerala.* Kerala. Dr. N. Aliyaru Kunju, Lecturer, Department o Arabic, University College, University of Kerala, Trivandrum.

2. Akhilesh Kumar. *Nrisingh: Akhyan evam puja ka vikas.* BHU. Prof. Maheshwari Prasad, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

3. Anil Kumar. *Neolithic cultures of Southern Uttar Pradesh and Western Bihar.* BHU. Prof. P.C. Pant, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

4. Botchsa, Venkatarao. *Tribal and folk art forms of North-Eastern Andhra Pradesh: A cultural and historical study.* BHU. Prof. Lallanj Gopal, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

5. Chaturvedi, Mohini. *Bodha evam Jain upasak: Ek tulnatmak adhyayan.* BHU. Prof. Maheshwari Prasad, Department of Ancien Indian History, Culture and Archaeology, Banaras Hindu University Varanasi.

6. Dixit, Akhilesh Kumar. *Chandel kaleen samaj.* BHU. Prof Maheshwari Prasad, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

7. Dubey, Uma Shankar. *Pracheen Bharat mein samajik arthik jeevan 300 E.P. se 300 E san tak.* BHU. Dr. A.L. Yadav, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

8. Harendra Prasad. *Jain puranon mein rajya.* BHU. Prof. (Mrs) Manorama Jauhari, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

9. Mishra, Padmakar. *Bhoj Palar aur uska yug*. BHU. Prof. Maheshwari Prasad, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

10. Pandey Brahma Deo. *Indonesia mein Ganesh*. BHU. Dr. (Mrs) S.D. Singhal Department of Ancient Indian History, Culture and Archaeology Banaras Hindu University, Varanasi.

11. Pandey, Kumar Bahadur. *Ganesh worship in Nepal*. BHU. Prof. Lallanji Gopal Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

12. Pandey, Pradeep Kumar. *Puranon mein varnit laukik devta: Ek adhyayan*. BHU. Dr. Ramji Pandey, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

13. Rahi, Kavita. *Maurya kal mein samajik jeewan*. BHU. Prof. (Mrs) K. Gopal, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

14. Rai, Umesh Kumar. *Prachen Bharat mein manoranjan ke sadhan, 600 B.C. to 200 A.D.* BHU. Prof. P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi and Dr. A.L. Yadav, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

15. Rajesh Kumar. *Uttar Hadappiya mridbhando mein alankaran: Ek adhyayan*. BHU. Dr. Birendra P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

16. Ramayan. *Prachin Bharat mein banking vyavastha*. BHU. Dr. Birendra P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi and Dr. A.L. Yadav, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

17. Ranjaan Kumari. *Pracheen Bharat mein Surya mandiron ka kalatmak visleshan*. BHU. Prof. V.C. Srivastava, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

18. Rekha. *Vaidik Brahman sahitya mein chitrit samaj*. BHU. Prof. J.N. Tiwari, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi and Dr. K.P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

19. Roy, Saroj. *Pracheen Bharat mein manoranjan ke sadhan 600 E.P. se 200 E. San tak*. BHU. Prof. P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi and Dr. A.L. Yadav, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

20. Sharma, Om Prakash. *Pracheen Bharat mein bahya suraksha evam antarik shanti kee rashtriya niti*. BHU. Dr. P.N. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

21. Sharma, Om Prakash. *Pracheen Bharat mein bahya suraksha adhyayan*. BHU. Prof. (Mrs) M. Jauhari, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

22. Sharma, Vidhu Shekhar. *Jankiharan ka sanskritik evam sahityik adhyayan*. BHU. Dr. Ramji Pandey, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

23. Shukla, Sushma. *Foreign trade and commerce in Ancient India*. BHU. Prof. P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi and Prof. Lallanji Gopal, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

24. Singh, Arvind Kumar. *A study of medieval culture in the Ist mill B.C.* BHU. Dr. (Mrs) Vibha Tripathi, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

25. Singh, Mahendra Pratap. *Brhat kalpa sutrabhaeya ka sanskritika adhyayan*. BHU. Dr. Harihar Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

26. Singh, Manoj Kumar. *Pracheen Dakkan mein Arya lekhon mein ullekhit sthanon ka adhyayan*. BHU. Dr. Nisar Ahmad, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

27. Singh, Sanjay Kumar. *Pracheen Bharat mein Vaishnava vraton ka ek itihasik adhyayan*. BHU. Prof. V.C. Srivastava, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

28. Singh, Seeta. *Shatpath Brahman ka sanskritik adhyayan Vaidik sahitya se sambhandhit*. BHU. Prof. M. Prasad, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

29. Singh, Suman. *Functional analysis of ceramics in Sunga-Kushan period*. BHU. Dr. (Mrs) V. Tripathi, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

30. Singh, Vijai Narain. *Champa mein Boddha avashesh*. BHU. Dr. (Mrs) S.D. Singhal, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

31. Srivastava, Kamini. *Pracheen Bharat mein Shaiv vraton ka ek itihasik adhyayan*. BHU. Prof. V.C. Srivastava, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

32. Srivastava, Laxmi. *Jain puranon mein varnit prasadhan evam abhushhanon ka adhyayan*. BHU. Prof. P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

33. Srivastava, Rajesh Kumar. *Kashi ka dharmik itihas*. BHU. Dr. T.P. Varma, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

34. Srivastava, Saroj Kumari. *Surkan Charitra Mahakavya ka sanskritik adhyayan*. BHU. Dr. T.P. Verma, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

35. Sumathankachy, B. *Socio-economic impact of British rule on Travancore society, 1860-1947*. Kerala. Dr. S. Ramachandran Nair, Prof, Department of History, V.T.M.N.S. College, Dhanuvachapuram.

36. Tewari, Neerja. *Ayodhya tatha nikatvartee kshetra: Ek puratatvik adhyayan*. BHU. Dr. B.P. Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

SOCIAL SCIENCES

Psychology

1. Kullai Reddy, L. *A study of some factors related to attitude towards the aged in an Indian population.* Venkateswara. Prof. P.V. Ramamurti, Department of Psychology, Sri Venkateswara University College, Tirupati.

2. Munshi, Rajlaxmi, Keshao. *Punctuality: A study in cognition and personality.* Nagpur. Dr. R.D. Helode, Department of Psychology, Nagpur University Campus, Nagpur.

3. Pattnaik, Bijayalaxmi. *Cognitive and linguistic developmental processes in children's stories.* Berhampur. Dr. A. Srikanta Dash, Reader, Department of Psychology, Utkal University, Bhubaneswar.

4. Sharma, Tribhuvan Kant. *Effect of school background on creativity, anxiety and self-perception: A factorial study.* Jamia. Dr. M.G. Husain, Head, Department of Psychology, Jamia Millia Islamia, New Delhi.

5. Srikanth Reddy, V. *Stress and coping styles among older and younger executives.* Venkateswara. Prof. P.V. Ramamurthy, Department of Psychology, Sri Venkateswara University College, Tirupati.

Sociology

1. Muthuchidambaram, S. *Professional women: A comparative study of women doctors and engineers.* Mother Teresa.

2. Prakasamma, M. *Analysis of factors influencing performance of auxiliary nurse midwives in Nizamabad District.* JNU. Dr. (Mrs) P. Ramalingaswami, Centre of Social Medicine and Community Health, Jawaharlal Nehru University, New Delhi.

3. Rangasami, Amrita, *The Study of social responses to disasters: The case of scarcity and famine in India.* JNU. Prof. T. K. Oommen, Centre for the Study of Social Systems, Jawaharlal Nehru University, New Delhi.

Social Anthropology

1. Ramana, Gaddam Venkta. *Problems of education among the tribal communities of Andhra Pradesh: Case study of Ashram Schools.* Venkateswara. Prof. G. Prakasha Reddy, Department of Social Anthropology, Sri Venkateswara University College, Tirupati.

Political Science

1. Chakraborti, Satyabrata. *Working class and the state: A study of the dooars plantation system.* Calcutta.

2. Chattopadhyaya, Sujitnarayan. *The changing pattern of dominance in rural society: A study of seven villages in West Bengal.* Calcutta.

3. Chaudhuri, Amiya K. *The legislative control over the executive: A case study of West Bengal Legislature.* Calcutta. Prof. Mohit Bhattacharya, Vice-Chancellor, University of Burdwan, Burdwan.

4. Farida Khanam. *A critical study of political thoughts of Maulana Sayyid Abul-Ala Maududi.* Jamia. Dr. Rashidul Wahidi, Reader, Department of Islamic Studies, Jamia Millia Islamia, New Delhi.

5. Gupta, Ananda. *Bharat China sambandhon mein Tibbat: Ek vishleshnatmak adhyayan, 1949 se 1962 tak.* Ghasidas. Dr. D.P. Shukla.

6. Jana, Kamal. *Political socialization in rural West Bengal with special reference to Nadia District.* Calcutta.

7. Nodzynska Ratajczyk. Anna. *Economic dimensions of the non-aligned movement.* JNU. Prof. Aswini K. Ray, Centre for Political Studies, Jawaharlal Nehru University, New Delhi.

8. Ramarajan, K. *Law and order administration at the district level in Kerala with special reference to Quilon District.* Kerala. Dr. K. Raman Pillai, Prof. and Head (Retd), Department of Politics, University of Kerala, Kariavattom.

9. Santishree, D. *Parliament and foreign policy: The Nehru era.* JNU. Prof. K.P. Misra, Centre for International Politics, Organisation and Disarmament, Jawaharlal Nehru University, New Delhi.

10. Sivaji, V. *Some aspects of power structure at district level: A study of East Godavari in A.P.* Osmania.

11. Sundar Ram, D. *Role of the opposition in Andhra Pradesh, 1975-1985.* Venkateswara. Prof. K.V. Narayana Rao, Department of Political Science and Public Administration, Sri Venkateswara University College, Tirupati.

12. Talyan, Ranpal Singh. *The attitude of the super powers towards India's policy of non-alignment from 1966 to 1984: A comparative study.* Kurukshetra.

13. Upadhyaya, Ashok Kumar. *Anusuchit jati aur janjati ke sanrakshan evam vikas hetu samvidhanik upbandh tatha Madhya Pradesh mein unka kriyanyvan.* Ghasidas. Dr. V.K. Srivastava.

14. Venkatnarayana Reddy, M. *An appraisal of reservation policy.* Osmania.

Economics

1. Chinna Venkatrama, M. *Dimensions of rural poverty in Cuddapah District of Andhra Pradesh.* Venkateswara. Prof. K. Munidoraswamy Naidu, Department of Economics, Sri Venkateswara University College, Tirupati.

2. Dasharatham, E. *Marketing of agricultural products: A study in Telangana.* Kakatiya. Dr. Mohammad Iqbal Ali, Lecturer, Department of Economics, Kakatiya University, Warangal.

3. Girija Rani, H. *Pattern of female labour force participation and utilisation: A case study in Andhra Pradesh.* Kakatiya. Dr. A.

Sudarshan Reddy, Department of Economics, C.K.M. Arts and Science College, Warangal.

4. Harinarayana Rao., C. *Grass Root entrepreneurship: Emerging trends, an analysis of Gramodaya in Anantapur District.* Krishnadevaraya. Dr. Ch. Umamohan, Department of Sociology, Sri Krishnadevaraya University College, Anantapur.

5. Ihidero, Idowu Samuel, *Economic study of small scale agro-based industry in Nigeria: A case study of Bendal State, 1975-1985.* Nagpur. Dr. (Mrs) S.S. Sonarikar, Prof. and Head, Department of Economics, Nagpur University, Nagpur.

6. Khan, Mohammad Azimuddin. *The impact and evaluation of tubewell irrigation: A study in Andhra Pradesh.* Kakatiya. Dr. Mohammad Iqbal Ali, Lecturer, Department of Economics, Kakatiya University, Warangal.

7. Kulkarni, Virendra Vishwambharrao. *A study on information distortion in the communication process of training and visit system.* Marathwada Agrl. Dr. B.S. Mahajan, Prof. Department of Agricultural Extension, College of Agriculture, Parbhani.

8. Lakshmipathi, R. *Changes in agricultural wages in Warangal: A temporal and spatial study.* Dr. (Mrs) N. Vijaya, Reader, Department of Economics, Kakatiya University, Warangal.

9. Laxmaiah, G. *Labour utilization in rural areas: A comparative study of irrigated and unirrigated villages in Karimnagar District.* Kakatiya. Prof. C. Sivarama Krishna Rao, Department of Economics, Kakatiya University, Warangal.

10. Meenakshikutty, P. *Economics of detergent industry in Kerala.* Calicut. Dr. P.P. Pillai, Prof., Department of Economics, Dr. John Mathai Centre, Aranattukara, Trichur.

11. Philomena, Yeruva. *Spatial and employment aspects of industrial development in Andhra Pradesh with particular reference to small industry.* Andhra.

12. Radhakrishna, S. *Socio-economic conditions of labour in coal mine industry: A study of coal mines in Andhra Pradesh.* Kakatiya. Dr. K. Venkat Narayana, Reader, Department of Economics, Arts and Science College, Warangal.

13. Rajesham, P. *Agrarian unrest in Andhra Pradesh: A micro level study in Telengana Region.* Kakatiya. Dr. A. Sudarshan Reddy, Head, Department of Economics, C.K.M. Arts and Science College, Warangal.

14. Rammanohar Reddy, C. *The incidence of agricultural labourers in India: Variations over time and space, 1881-1981 with a study of Varhad in Maharashtra.* JNU. Prof. K.N. Raj, Centre for Development Studies, Jawaharlal Nehru University, New Delhi.

15. Satyapa, Lohar Netaji. *Study of impact of lift irrigation schemes on the economy of the cultivators in Kolhapur District.* MP Krishi. Dr. M.P. Dhongade, Prof., Department of Agricultural Economics, College of Agriculture, Pune.

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CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
December 1, 1990	National Symposium on Science and Technology in Ancient India.	Topics proposed to be discussed include Astronomy & Mathematics, Metallurgy, Medicine, Aeronautics, Engineering, Computer Science and Artificial Intelligence.	B.M. Birla Science Centre, Hyderabad	Dr. B.G. Sidharth, Director, B.M. Birla, Science Centre, Adarsh Nagar, Hyderabad-500 463
December 9-12, 1990	18th International Marketing Congress	The theme of Congress is Marketing Coooperation with North America	Institute of Marketing Management, New Delhi.	Dr. Jagjit Singh, Secretary General & Senior Professor, Institute of Marketing & Management, 62-F, Sujan Singh Park, New Delhi-110 003.
December 13-15, 1990	DEI-UGC National Seminar on Translation-Transcreation and Creative Writing in English.	To develop courses in Translation, Transcreation and Creative Writing in English for College/University Teaching.	Department of English, Dayalbagh Educational Institute, Agra.	Dr. Darshan Dayal, Head, Department of English, Dayalbagh Educational Institute, Dayalbagh, Agra-282 005.
January 18-20, 1991	Tenth State Level Academic Conference of Maharashtra Federation of College Library Association (MFCLA)	Themes include "Library Consciousness in Society."	Peoples College, Nanded (Maharashtra)	Mr. P.M. Jaiswal Convener Librarian, Peoples College, Nanded-431602.
July 21-26, 1991	Seventh International Meeting of University Administrators	Themes to be discussed are: (i) Standards of Professionalism in University Administrations; (ii) International Cooperation; and (iii) The Entrepreneurial University.	Conference of Registrars and Secretaries and Conference of University Administrators of the United Kingdom.	Dr. F.C. Verschoor, Chairman Organising Committee, Congress Bureau, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands.

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Editor :
SUTINDER SINGH

1990
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Cultural Perspective on Indian Education

D.A. Ghanchi*

Introduction

Education is a process of acculturation in its essence. The process is unique in this respect, as it is shaped by the culture on one hand, and on the other, it also shapes the culture itself. No education system can operate in a cultural vacuum, for culture provides the very conceptual and philosophical foundation for the entire system to stand on and to operate from, and to have a frame of reference for its evaluation. It also provides a driving force in the form of goals to strive for and to realise, and thereby, establish the *raison d'etre* for its very existence. Viewed thus, education and culture emerge as mutually interactive forces.

Cultural Development

Human societies have historically passed through stages of cultural development ranging from pre-historic barbaric primitiveness to post-modern sophisticated refinement. Such passage from one state of development to another has not been automatic or free from turmoil and tensions. It has been the consequence of deliberate endeavour on the part of individual and communities within their cultural parametres, at a considerable cost in the form of human and material resources.

India's Culture

The Indian culture heritage, for example, has taken as many as about five thousand years to build up. It's a monolithic mosaic to whose formation have contributed innumerable people and their societies, diverse races and communities, various schools of thinking and movements for the realization of the ultimate truth, and forces like politics, warfare, commerce, arts, science and technology. In fact, the multi-strand cultural formation in the Indian sub-continent is one of the few exciting chapters in the annals of the human race transiting from chaos to cosmos, from conflict to co-existence, from rejection to accommodation, from exclusiveness to inclusiveness, and, thereby, ensuring a unique phenomenon of unity in diversity. It is a priceless possession to be jealously guarded and preserved for the posterity. Indian seers over the centuries past have seen to it by providing appropriate education to the respective generations, and thereby inculcating in their minds a profound regard for and an unflinching commitment to that heritage, so much so that culture becomes an article of faith for oneself, for which one would sacrifice even one's life.

Perspectival Need

The educational philosophy of conservationism of culture advocates such learning experiences as would develop in the learner attitudes of appreciation of and pride for the culture of his society in the narrow sense, and that of the human race in the broad sense. Every human society would and should endeavour to carry out this dual cultural function of its education system. Indian education system also has got to develop an appropriate cultural perspective to influence its goals, contents and methods. The India of the nineties stands on the cross- roads of cultural options. It is being pulled apart by contradictory demands by the old, the new and the sham shrewdly masquerading as a Messiah. It is high time the Indian mind chose the right option and imparted an appropriate cultural perspective to Indian education.

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* *Pro-Vice-Chancellor,*
North Gujarat University, Patan-384265 (N.G.)

Conceptual Dimensions

There are four dimensions to the issue of cultural perspective on education. They are:

(i) Conservation
(ii) Preservation
(iii) Enrichment
(i) Promotion

All of them need to be considered in unison in the context of India if a healthy interactive relationship is sought to be ensured between education and culture. Let's examine, in brief, what each means.

(i) Conservation

This is the basic survival instinct of every living species. It tries to keep with it what it has been bequeathed by its predecessors as well as what it has accomplished by itself. Objects, ideas, traditions, practices, customs, beliefs, superstitions etc. found the world over, surviving for centuries, are an evidence of this instinct in the human race.

However, conservation without discrimination in a blind belief of 'old is gold' would be an irrational craze. Similarly, conservation out of a wild sense of superiority of one's culture over that of others is a mark of latent bellicosity. Conservation with a fine sense of discernment and appreciation is a mental attitude inculcated by the right type of education. Indian cultural heritage has both good and evil in it, the evil having crept into it over years, by negligence, by ignorance and even by design. We have a highly developed language—the Devbhasha—with one of the richest treasures of literature expressing the subtlest feelings of a highly refined human mind. We also have scores of other languages and dialects. We have a bewildering variety of arts and crafts. The hearts of the common menfolk and womenfolk in India throb with emotions of affection, renunciation, magnanimity, compassion and regard for every form of life. And yet gender discrimination, untouchability, distinctions of caste, creed, language, region and status stink in every nook and corner of the country. Only true education can teach us what to conserve and how much, and what should be discarded.

(ii) Preservation

Whereas conservation is a static concept, preservation signifies an active, dynamic approach to culture. It subsumes conservation, for whatever is to be organically preserved, must have a local habitation and a name. However, it has to be subjected to benign preservative processes which may be ideational, social, political, scientific, technological, managerial, and so on. Whatever is sought to be conserved should be ensured a healthy and secure existence. It should be saved from deterioration, decay, and, of course, avoidable demise.

It is our common knowledge that we have conserved many architectural monuments, but they haven't been preserved carefully and have been allowed to disintegrate. That also is the fate of several art forms, the well-knit family system and joint celebrations of festivals by people of different religions. We have woefully neglected the art and science of cultural preservation. It has, therefore, wrought havoc with the vital segments of whatever has been conserved.

It's appropriate education alone that can foster in our minds and hearts the right attitudes and will to preserve the cultural heritage whose custodians we are on behalf of the posterity.

(iii) Enrichment

Human culture is an organic phenomenon. It is a living, growing and changing reality. It is as much subject to the ravages of vagaries of time, obsolescence of ideas, irrelevance of practices, commotions of nature and conflicts of human interests, aspirations and ambitions, as it inevitably stands to gain from contributions by human ingenuity, creativity, egalitarianism and sensitivity to all that is good, beautiful and beneficial.

Enrichment assumes a readiness to modify, to redesign, to add to or subtract from and to diversify the cultural reality. The modern science and technology, the advances in the knowledge of social sciences and humanities, the enormous changes in political ideologies and practices, and the evolution of the science of management of human affairs are new facilitators for enriching the cultural heritage of man.

But, change is an anathema to the status quoists, fundamentalists, perrenialists, obscurantists and all those whose vested interests are at stake as a result of change. And modern India has legions of those who flaunt all sorts of labels, raise all types of slogans and organise all kinds of movements and agitations to thwart change, to push India back into the dark medieval ages. They do not hesitate to grab any convenient excuse, a language, maybe, English, Urdu, Punjabi, Sanskrit, etc., an issue, maybe, reservation for backward communities, dowry deaths, sati, etc., and instigate violence against change. One of the reasons for the slow pace of change in India is the nefarious machinations of these self-seeking reactionaries in every community.

Therefore, it is education, and continual education alone that can prepare people's minds to be ready to change their culture whenever necessary and enrich it in keeping with the emerging world of the twenty-first century. It is education alone that can empower them to think on their own and choose cultural options by themselves.

(iv) Promotion

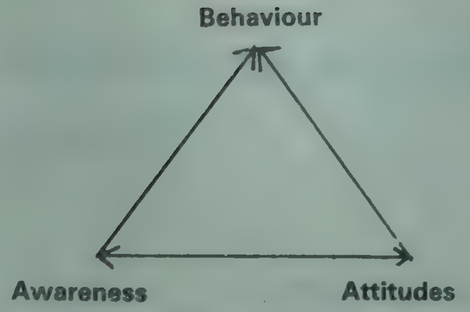
A living human culture is a flux. It must continue to flow and irrigate and fertilise the minds and hearts of people. Culture needs to be promoted and supported so that anti-culture does not take hold of the people's thinking, and their actions. And decidedly, education is the fittest vehicle of culture. True education is never culture-neutral. Of course, care has to be taken that under the label of culture no dogmas, rituals, superstitions, and hymns of hatred, disharmony, chauvinism, parochialism and violence get pedalled into our classrooms.

Culture promotion is thus, a delicate task, particularly in the contemporary India's climate of distrust among different communities, politicisation of religions, more so of old and new denominations, reversion to almost superstition—ridden rites and rituals in all the major religious groups, and emergence of militant cults in the name of religion or region or ethnic groups, and so on. But the delicate task has to be addressed.

It is the policy makers, curriculum framers, classroom teachers and educational administrators who will have to address this critical task. A strategy of specific measures is suggested below.

Measures

The four dimensional cultural process is an integrated function of awareness, attitude formation and a consistent behaviour born out of conviction and commitment.



Thus, the contents and methods of education will have to be so devised as to integrate the cognitive, affective and conative aspects of a learner's personality. Obviously, the present narrow curriculum which is mostly a tightly bundled package of information needed for an external examination will have to be overhauled. Also the present ritualistic didactic teaching and memory-related testing will have to be radically changed. And the human-ware of the present system will have to develop a new world-view of culture, free from the prejudices and biases that are a bane of Indian intelligentsia. In this respect it would be pertinent to quote Vivekananda here: he said, "Religion cannot be purely based on blind belief. It must justify itself by discoveries of reason through which every science justifies itself." The same is true of culture.

We, therefore, will need a five-point strategy to address the task of making education and culture mutually nourishing forces to restore India her pride of place in the comity of the civilized peoples of the world.

1. Developing a progressive philosophy of a vibrant culture and a dynamic education.
2. Shaping a curriculum which, in Jawaharlal Nehru's words, would ultimately "assimilate science and technology into our entire social and cultural fabric", and be a tool of acculturing the learners as citizens of a progressive country as well as of the world.
3. Producing instructional materials that should help carry out the cultural goal of education in and outside the formal classrooms.
4. Devising methods of interaction between teachers and students on one hand, and between educational institutions and community on the other, so that education becomes a culturally transformative exercise far above the present stagnating drudgery of examination-tied ritual.
5. Conducting institution-based autonomous projects of students' researches, teachers' in-house training, community services, creative arts and production of intellectual materials so that there is a continual reconstruction of the cultural perspective on education.

(Contd. on page 5)

NPE vis-a-vis Acharya Ramamurti Review Committee's Perspective Paper

S. Abdul Kareem*

That no two academics agree on the common National Policy on Education is a good augury for education in a democracy. Yet schemes get mooted, as never before, as one reaches the dying decade ushering the new century, or that it goes to the head of new leadership aflame with the initial euphoria and dynamism. But things that get started with a bang are bound to end in a whimper. Commissions and committees headed by stalwarts like Mr. Sargeant, Dr. S. Radhakrishnan and Dr. Kothari diagnosed the ills and prescribed the pills, but the strategies of implementation floundered for want of the wherewithal and the strangulating resource crunch.

The need to review the policy before it had run its full course of five years is the most uncharitable step taken by the new dispensation and the recent perspective paper may meet the same fate with the change of rulers at the Centre. The collective wisdom that educational planning and administration has generated over these decades is adequate to give us the recurrent motifs to map out areas needing attention so as to chart out an operational strategy of implementation of the chosen schemes of proven worth. One could make much headway without repeating an exercise that has been already gone over. That our experts can ill digest the cooked of others is too glaring to be avoided.

The compelling concerns that necessitated the review have been identified as (i) the right to work which is proposed to be enshrined in the Constitution, (ii) the unity and integrity of the nation that is seriously threatened, and (iii) the impoverishment of the inner man in India. The comprehensive grasp of the perceptions outlined in the National Policy on Education can hardly contradict the priorities now listed. It is the proper focussing of the priorities in the right perspective that could have given the lee way.

The perception that education is for all and that education is for life are at the basis of both documents. Avenues of work ethos could be highlighted to facilitate a national debate paving the way for Constitutional amendment. That the previous policy had the elitist aberrations and did not enjoy the support of the people is a matter of opinion. The hair-splitting between an illiterate adult and an uneducated person is carrying the point too far, though what is of paramount importance is to buttress the educational pyramid at the base so as to minimise if not entirely obviate the possibility of illiterates in India in the 21st century. That educational administration needs decentralization is being tried through the Panchayatraj institutions which has evoked a mixed reaction. There is the need to give substance to the concept of concurrency mooted with the 42nd amendment in 1976 where regional planning can get going with a modicum of overseeing by the Central agencies.

The Review Committee has shown its allergy to the concept of human being as 'national resource' and hence an asset more on the premise that the whole approach is utilitarian. If the work ethos is to be inculcated in the youth through the system and the right to work to be enshrined in our Constitution, how can skill formation and resource development be given a go by? Too much of harping on the humanistic and liberal model has made us more vocal about vocationalization without content. Does the cult of skills cut at the roots of the inner man's advances 'towards an enlightened and humane society'? What is wrong if the educational system is to produce what the economic system demands? After all, the wealth of a nation is the skill of its people, if the Japanese experiment is of any guidance to us.

The avenues of non-formal channel thrown open recently are to be utilised to their optimum capacity. The Navodaya Vidyalayas, of course, were ripe for a rethinking. Is there a need to segregate the rural talent if it is to sharpen the cutting edge of competitiveness? It is a moot point to be sorted out. The Common School System served by the State and the Central Boards need better management techniques as they are found sliding down when compared with efforts by voluntary and missionary agencies. The Open University System under the aegis of the Indira Gandhi National Open University (IGNOU) bids fair to harbour and provide succour and support to those denied avenues of formal education.

It is strange that the Review Committee is silent about the role of teachers and their accountability. 'The Teacher' is the exclusive subject of the whole chapter

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**Principal, Anjuman-e-Islam's Nehru Arts, Science & Commerce College, Hubli-580 020, Karnataka.*

Part IX in the NPE. Schemes of teacher education, academic orientation, projects of teacher mobility, self-evaluation and performance appraisal schemes and formulations of the code of ethics by the teacher organisations have opened a host of avenues for academic articulation. Grievance Redressal Cells could be added to help the system work effectively. The kingpin he is, of the whole system cannot be undermined. Schools at the doorstep of the people and the neighbourhood schools with local area planning should give unto teachers the requisite administrative function. Those called upon to man the manpower at various levels should not have a mere marginal role but come centre-stage.

The Review Committee has categorically supported schemes of 'Early Childhood Care and Education' ECCE (II-iv) which find detailed expression in the NPE-Part V-5.1, 5.2, 5.3 and 5.4. Premises such as these with areas of agreement could have channelised the efforts of the disparate groups during the closing years of the five-year span. The NPE has emphatically recorded its resolve to give the highest priority to solving the problems of children dropping out of school. (V-5.12).

The realm of values could have been a better meeting ground as both documents deal at length with them. (NPE: 8.4, 8.5 and 8.6-R.C.: II xvii). The premise holds out a promise to awaken the inner man by tapping the potential of the unconscious, the repository of values as Paulo Freire tried to conscientize the human person. The hidden curriculum ridden with value connotations needs vocal exponents from the enlightened faculty. The gross neglect of this cherished realm has compelled us to voice the concern for integrity and sovereignty of the people. The post-Independence generation in India is hardly responsive to the sacrifices of their forbears for freedom. The lessons of tolerance, the efficacy of debate, the need to eschew violence—these must form the breath and finer spirit of the basic tenets of the resurgent Indian youth.

The Review Committee has sought to counterbalance the elitist aberrations of the NPE with the liberal approach of non-formal schooling fully in tune with the rhythm of the rural life facilitating the children to drop in at will (to avoid drop outs) with no rigidity whatsoever. The Common School System fostering social cohesion and national integrity, the linkage between the 'world of work' and the 'world of school', examination reforms in terms of modularisation, semesterisation and credit transfer and credit accumulation, the realistic policy of the medium of instruction—concepts such as these are not alien to the two documents to warrant any radical departure as is sought to be made out in 'Part II—Points of Departure: Focussing on Issues' of the Review Committee document.

The NPE had strongly advocated a positive, interventionist role in the empowerment of women (Part IV-4.2) which is also voiced by the Review Committee document III-6. The system of networking of educational institutions (NPE 6.15-ix) agrees in spirit with the decentralized school management of the Review Committee document III-8. Both documents agree on augmenting the educational resources for education to the tune of 6% of the national income. The Review Committee has found during the seven plan periods that elementary education has registered a slide-down from a commanding 56% to the dismal 29% of the allocation of resources while higher and general education has run away with a bigger chunk from a meagre 18% to 44% of the resources during the same period. The whole approach looks lopsided in stepping up resources for higher education at the cost adequate allocation at the lower level.

That a Review was imminent had been inbuilt in the NPE itself (11.5). The resource crunch did not give it the vibrancy that it aspired initially. There is the inextricable link between education and employment. We have no well defined employment policy, much less a consistent youth policy. Schemes of self-employment and entrepreneur development must get a big boost in our national planning if the right to work is to have any substance. What passes human comprehension is the absence of will, the paucity of commitment and the lack of involvement.

Cultural Perspective on Indian Education

(Contd. from page 3)

Conclusion

By developing an appropriate cultural perspective on education, it will be possible for us to derive two benefits. One, we well succeed in making education an effective instrument of change for the better, for by doing so, we will be able to make learning, to quote Paulo Freire, "a process of redefining oneself, of learning new responses, of learning to give up old inhibitions, of creating new relationships, and new styles of living."

Secondly, by developing a comprehensive national perspective of culture in the context of the global imperatives we shall have awakened ourselves to the realities of the modern world to redeem our pledge to Mother India invoked so feelingly by Sarojini Naidu in her "Ode to India":

> Thy future calls thee
>   With a manifold sound,
> To crescent honours, splendours,
>   Victories vast,
> Waken, O slumbering Mother
>   and be crowned!
> Who once wert Empress of
>   the sovereign past.

A DISCUSSION PAPER

The Policy, Philosophy and Problems of University Adult Education in India

S.Y. Shah*

A new phase began in the history of Indian university adult education in 1978 when the Government of India launched the National Adult Education Programme and subsequently the University Grants Commission (UGC) initiated the policy of promoting adult, continuing education and extension programmes (henceforth referred to as adult education) in the universities. Apart from providing the blueprint of programmes, the UGC also supported the universities with hundred percent financial assistance. This policy has led to the massive expansion of university adult education at a very rapid pace during 1980's when 92 universities recruited about 350 members of core staff and set up the infrastructure for the implementation of adult education programmes. Notwithstanding the continuation of resource support from the UGC, adult education programmes in most of the universities have been languishing as a fringe sector of activity. A large section of the university community remains either ignorant of or indifferent towards adult education. While some of the teachers oppose adult educators as "tresspassers" into the university system, few of the key administrators tolerate them as "show pieces of extension work." Because of their unique designations as Directors, Assistant Directors and Project Officers, the university adult educators are neither recognised as teachers nor administrators. They exist as alien bodies in the university system. If on the one hand their status has remained vague, on the other hand their problems have not received adequate attention. Why is it so? Is it due to the UGC policy? To what extent are the university adult educators responsible? How can their problems be solved? Who should take the initiative? How to integrate adult education into the university system?

The variety of issues related to university adult education basically revolve around the lacunae in the UGC policy and the inability of the university adult educators to conceptualise the philosophy of university adult education and define their role. By examining these drawbacks in the light of extensive study of literature—the policy documents, deliberations of several conferences and seminars, writings and speeches of eminent adult educators and formal and informal interviews and discussions held during the past six years with a number of academicians, adult educators, policy makers and activists, this paper argues that unless the university adult educators strive to distinguish themselves as a distinct category of professionals committed to the development of adult education as a discipline of study through teaching, research and extension their problems cannot be solved.

In the early years of 1980's when the UGC had initiated the policy of supporting the university adult education programmes, there was an acute shortage of adult educators who had the appropriate educational qualifications and professional experience to fill-up the university level positions of Director, Assistant Director and Project Officer in the rank of Professor, Associate Professor and Assistant Professor respectively. Yet a number of universities welcomed the scheme mainly because of the hundred percent financial support. When the universities advertised the posts, there were mainly two categories of applicants. The first category who were in the majority came from outside the university system—from the governmental and non-governmental organizations. Though most of them had the professional experience they lacked appropriate educational qualifications and university experience. Some of them having served long in the government had developed bureaucratic attitudes and approaches which hampered their functioning in the university system. Ignoring the inherent deficiencies when some of them had adopted an aggressive approach, there were conflicts which further alienated them from the mainstream and hence they failed to make much headway in the university system.

The second category who hailed from the university system, had hardly any interest in adult education. They also lacked the professional experience. Since promotional avenues were limited in their parent

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**Adult Continuing Education and Extension Unit,
3rd Floor, Old Library Building,
Jawaharlal Nehru University, New Delhi-110 067.*

disciplines and they were stagnating for long, some of the sympathetic Vice-Chancellors "accommodated" them in the newly set up adult education units. How could such people do justice to adult education? Some of the universities which could not find the above two categories appointed full-time Professors or even superannuated bureaucrats as Honorary Directors and that too on adhoc basis. While some of the Professors took interest in adult education, most of the bureaucrats remained fully occupied with official meetings and conferences. The few qualified adult educators who were recruited by certain universities were either too junior to take-up the leadership role, or they did not have any leadership qualities at all (?) In this situation where nearly 75 percent of the key posts of Directors and Assistant Directors are occupied by "less qualified or disinterested" (?) adult educators, is it possible to expect high level of professional commitment and competence from them?

This peculiar situation arose primarily due to the UGC policy of supporting university adult education at a very rapid pace during 1980's. To a great extent it was because of the personal interest of the then UGC Chairperson Dr. Madhuri Shah. Being at the helm of affairs, she could allocate adequate resources required for the expansion of university adult education. At the same time had the UGC made an effort to systematically ascertain the availability of professional manpower in the country and not motivated the universities by providing ready-made programme packages and grants; and instead, resorted to a policy of slow and steady expansion of university adult education according to the ethos of different universities; then, perhaps, the foundation of university adult education would have been much stronger. As the basic infrastructure of university adult education remains weak, we cannot expect better performance.

Being aware of the situation, the UGC did make some efforts to improve the professional competence of the core staff through the organization of short-term orientation courses, workshops and summer schools. But a review of the contents of orientation courses and experiences of certain participants have revealed that such programmes were too inadequate to serve the purpose. Due to the dearth of high quality professional literature and specialists in India, these courses could only provide some technical know-how in the implementation of adult education programme and record keeping. Hence a section of adult educators tend to conceive adult education as a field programme. They are blissfully ignorant of the fact that it is a field of study as well! If the university adult education in India has to be improved, then the UGC need to workout a scheme of either developing three or four centres of excellence in adult education in India, or identify such centres in other developed or developing countries where the university adult educators could spend 6-12 months for intensive study and research. If the UGC makes an effort to include adult education in some of the existing exchange programmes, then it may provide an opportunity to our adult educators. Such an exposure may enable many of the university adult educators to improve their theoretical understanding so that they could relate theory to practice or develop theory from practice and thus generate new knowledge which may contribute to the growth of the discipline of adult education. When adult education develops as a discipline of study in the universities, it is likely to provide lots of insights into the practice which may ultimately develop the profession.

The UGC guidelines on designations, qualifications and duties of university adult educators have raised a number of issues. As per the guidelines, the adult educators are expected to undertake extension work, develop and offer courses besides conducting researches. Unlike the teachers, their core activity revolves around extension and hence they are given bureaucratic designations viz., Director, Assistant Director and Project Officer. However, the UGC document—*A Policy Framework of Higher Education* states that extension should become the third dimension of higher education and it should get integrated into the entire university system which implies that all the teachers should undertake extension and it should no longer remain as the exclusive concern of adult educators. Given this context, there is hardly any justification for the present designations of adult educators. Besides, it has been observed that the members of the Faculty of Social Work, Home Science, Agriculture, Rural Development, Community Medicine etc., who undertake excellent extension work do not have any special designations. It may be argued that if the adult educators are given the same designations as of teachers, they would be able to deliver the goods more effectively. Being a faculty, they would be in the mainstream of university life which would enable them to seek better cooperation of students, teachers and even administrators in their extension work. In fact, students would be more receptive to teachers than adult educators. For enhancing the effectiveness of extension work in the universities, the designations of adult educators need to be changed at the earliest and in this connection the UGC should issue policy directives to universities.

Some of the champions of extension, however, fear that if the designations of adult educators are changed and they are allowed to teach, perhaps extension work would suffer. They argue that some of the courses which the adult educators are desirous of developing and offering could be effectively taught by the existing teachers of different departments. These assumptions need to be examined from several angles. If extension is the only or main activity of adult educators, then there is hardly any need for appointing highly qualified and paid persons for the job. It could well be undertaken by comparatively lesser qualified and paid persons. Adult education being a field oriented subject, it could be effectively taught by the adult educators who are in touch with the field as they would be able to relate theory to practice and train the professional manpower which remains as one of their foremost task. To be effective, the training has to be offered in the form of a number of courses spread over 6-12 months duration which could fit into the university curriculum. The focus has to be primarily on pre-service programme than on in-service which could be of short duration and conducted by governmental and non-governmental agencies.

It seems that the rationale for the employment of highly qualified adult educators has not been understood by many. As the adult educators in the government and non-government organizations are especially but not exclusively concerned with the field programmes, research remains neglected. Most of them do not have the time, competence or infrastructure to undertake researches or even document their experiences systematically and bring out scholarly publications. In the absence of these, adult education cannot grow as a profession. Hence it was felt that by creating a new category of professionals—university adult educators—who by virtue of their research qualifications and university infrastructure, would focus primarily on documentation, research and publications and thus contribute to the growth of the profession, both as a field of practice as well as study.

The development of the discipline of adult education demands that each adult educator should identify a specific area which should be studied by applying the tools and techniques of different disciplines. In the case of adult education, the focus may have to be on the formulation of policy, programme package, implementation, and socio-economic contexts. All these aspects may have to be studied in a historical perspective so that the previous mistakes or failures are not repeated and at the same time, certain valuable experiences of the past are kept in view for future planning. Without a historical perspective, it would be difficult to formulate any policy or programme. For optimum utilisation of resources, the economics of adult education need to be studied. As the success of the programme depends on the materials and training, the curriculum will have to be examined. The sociologists will have to study the various socio-political forces and factors that influence the programme formulation and implementation. Unless different dimensions of adult education are studied in depth by different adult educators in accordance with their own interest and background, the discipline of adult education cannot be developed. When each adult educator identifies an area for intensive study and spends considerable amount of time, it may not only enable the particular individual to emerge as an specialist but also make significant contribution to the subject through research studies and publications. It becomes all the more important for the university adult educators to focus on researches, documentation and publications as recognition, rewards and even annual reports in the university system take into consideration only such work.

Yet, it is surprising that most of the university adult educators in India function as mere coordinators and administrators of UGC funded adult education programme. They hold the UGC guidelines as the directives to be strictly followed and rarely exercise their academic freedom or are aware of university autonomy. In fact the UGC only provides broad guidelines and leaves its interpretation and implementation to the universities. Hence university adult educators have the freedom to mould their programmes within the broad framework of adult education Instead of striving for an exclusive identity, some of the university adult educators join hands with governmental and non-governmental organizations in the routine implementation of adult education programmes and remain contented. Swayed under the influence of political leaders and activists, they consider it sacrosanct to devote their whole time and energy to stereotyped field programmes, thereby underestimating their own professional calibre. Or, do they really lack the confidence or competence to undertake more challenging professional assignments? Or, do they have some specific or vested interests in establishing such linkages? However, if they provide some new insights or inputs into the ongoing programmes of the outside agencies, or even try to document the work, their participation may be justified. In fact such linkages may be beneficial for the university adult educators as they would provide an opportunity to them to test some of their theories and thus generate new knowledge. On the contrary, when they associate with outside agencies merely for the sake of programme implementation, sometimes it may create conflicts and the outside agencies may also accuse the university adult educators of sharing their fruits.

The second important objective of university adult education is the much publicised involvement of student community in adult education programme. It is argued that by harnessing the energy and enthusiasm of students, the adult education programme could be effectively implemented and that too with nominal resources. But the experiences of several universities show that the scope and strategies of student participation in extension work varies considerably due to the character of student population and institutional ethos. Hence it would be detrimental, if all the universities blindly follow the UGC guidelines. Each university need to ascertain the potentialities of extension work in their respective jurisdiction.

From the point of extension work, the universities in India may be categorised into four:

(i) Those which have a strong tradition of extension work and where extension forms a part of the curriculum at different levels, e.g., Gandhian institutions like Gujarat Vidyapeeth, Gandhi Gram Rural Institute etc.

(ii) Those which have some tradition of extension as it forms a part of course work in certain departments, viz., Social Work, Home Science, Rural Development, Agriculture, Community Medicine etc., e.g., Viswa-Bharati, Jamia Millia Islamia, agricultural universities etc.

(iii) Those which have plenty of scope for extension work and have a large number of undergraduate students, e.g., Universities of Delhi, Bombay, Madras etc.

(iv) Those which have neither strong tradition nor enough scope for extension work and where the majority of students are involved in professional, post-graduate and research studies, e.g., JNU, IITs, Universities of Hyderabad, Pondicherry etc.

Extension work being part and parcel of curriculum in the first two categories of universities, there would be practically no problem in ensuring sufficient student participation. While it would be comparatively easier to attract a large number of undergraduate students (of the third category of universities) for voluntary extension work as they may be having plenty of leisure time and a craving for adventure, social service, voluntary work etc.; it would be a strenuous task to attract even a handful of students for voluntary extension work in the fourth category of universities. In these universities the majority of students being career conscious tend to devote most of their spare time for the preparation of competitive tests. However, if extension becomes a part of their course work then they may opt for it. Hence to operationalise the concept of extension in such universities, credit based extension programmes need to be developed by the adult educators. Some weightage in admissions or award of grace marks may create problems where admissions are made on the basis of competitive tests and grade system prevails.

The development of innovative courses in extension may necessitate an extensive study of the existing curriculum, assessment of the interests of students, ascertaining the resources and requirements of the university and local community. When the university adult educators initiate such challenging academic work which involves research, course development and teaching—all centred around extension and active student participation—then they may emerge as a distinct but distinguished class of professionals who will be welcomed by the university system. On the other hand, if they confine themselves to the implementation of tailor made developmental programmes like any other governmental or non-governmental organization, then in course of time they may lose their identity. Though the developmental programmes may provide temporary resources (as most of the funding agencies insist on returning the assets created from the funds after the completion of programme) in actual practice, such involvements may demand lot of time and energy for mundane administrative work, thereby dampening the enthusiasm for serious academic pursuits. If the university adult educators continue to involve in such activities, then they are likely to be dubbed as incompetent to undertake research and bring out university level publications. In course of time, if some of the critiques point out that university adult educators are mainly concerned with the implementation of the same programme package of adult education like their counterparts in government and voluntary sectors, and hence their pay should be reduced or made at par with others, then it may be difficult for the university adult educators to justify and defend their privileges, perks and status.

The university adult educators are a distinct class of professionals committed to the development of their profession through research, teaching and extension. Hence it becomes imperative on their part to carve a niche for themselves by ascertaining their personal interest, professional requirements and ethos of their respective universities. In fact by virtue of their qualifications and placement, they are uniquely qualified to play a key role in the development of adult education both as a field of practice and study. If they strive to achieve that, then they may succeed in getting due recognition from the university community as well as outside agencies. □

(The author is grateful to Dr. Anita Dighe, Director, Adult Education Unit, Jawaharlal Nehru University, New Delhi for going through the paper and offering valuable comments. However, the author, alone is responsible [illegible] expressed in this paper).

UGC Aid for Andhra Varsities

The University Grants Commission (UGC) has allocated about Rs. 15 crore for development of science and humanities faculties of eight universities of the Andhra Pradesh State for the VIII Plan period. This was revealed by the State Higher Education Minister Mr. N. Janardhan Reddy in Hyderabad recently. He said he had held discussions with the UGC vice-chairman on plan allocations and the UGC had communicated plan sanctions during the first year of the plan for the first time. Also, the UGC had for the first time, agreed to give grants for campus development, including strengthening water and power supply, office automation, audio-visual aids and reprography.

The Minister said the Andhra University would get a grant of Rs. 1.93 crore, Kakatiya University Rs. 1.8 crore, Nagarjuna University Rs. 1.85 crore, Osmania University Rs. 2.05 crore, Sri Krishnadevaraya University Rs. 1.62 crore, Sri Padmavathi Mahila University Rs. 1.35 crores, Sri Venkateswara University Rs. 1.89 crores and Telugu University Rs. 90 lakhs.

Experts committees had also recommended special programmes for which Rs. 10 crore more would be sanctioned.

He said additional allocations of Rs. 10 crore were expected for engineering and technology, management for JNTU and four other universities. Universities offering management courses for over five years would receive additional grant of Rs. 15 lakhs each.

Mr. Janardhan Reddy said a centre for weaker sections and a centre for rural development would be established in Andhra University, a centre for disaster studies would be set up at Nagarjuna University, a centre for fabrication of low-cost equipment would be set up at Osmania University, a centre for tribal welfare would be set up at Sri Krishnadevaraya University and an institute for vocational courses would be set up at S.V. University during the eighth plan period. The UGC had also agreed to consider proposals for grants for sports and games, continuing education programmes, projects on woman studies, computer courses and special research projects.

Rs. 60 Crore for Environmental Studies

The Union Ministry of Forest and Environment has formulated a scheme of "Environmental Education", designed to create an awareness about the environment and the steps for its conservation. An allocation of Rs. 60 crore is being made in the Eighth Plan for studies of environment as a part of school education in the country. There is a provision of Rs. 2 crore for the purpose for the year 1990-91 alone. It covers more than 11,000 schools in various States and Union Territories, including 520 schools in Delhi. It is applicable to the Government schools as well as the private ones getting Government grants.

A document prepared by the Union Ministry of Forest and Environment says that voluntary agencies active in the field of environment are also provided financial assistance by the Government for carrying out field programmes for school teachers and students. The funding for the environmental orientation scheme for schools is done by the Union Ministry of Human Resource Development, and the States get hundred per cent assistance for the implementation of the scheme.

Special syllabi are prepared, and the textbooks on the subject are approved by the environment project authorities in consultation with the environment experts, teachers' training institutes and State councils for education, research and training, to ensure that the books written meet the requirements of the local environment and eco-system to make the studies realistic and nearer home to the students. The schools are also encouraged to set up small school nurseries on the school campus for a sort of practical training to the school children.

Higher studies in environment have also been introduced at the university level, including the post-graduate level with Environmental Science as one of the subjects of studies. Certain universities have also made it a subject for research at the M. Phil and even Ph.D., while several universities have introduced Environmental Studies as a part of courses in Zoology, Botany and Civil Engineering.

Balwadi Programme

The Women's Studies and Development Cell of S.D. College, Muzaffarnagar, in collaboration with the Church's Auxiliary for Social Action (CASA), New Delhi organised a Balwadi Programme at Naya Gaon (Mansurpur). The objectives of the programme were: (i) to improve the nutritional and health status of 0.6 years of children; (ii) to make the foundation of pre-school children for their physical, mental, social and moral development; (iii) to reduce the events of mortality, mobidity, malnutrition and dropout; (iv) to help develop social feeling and co-operation among children; (v) to give education to mothers about proper nutrition and health of their children. Also give education to pregnant and lactating mothers; (vi) to make the effective-relation among various departments for proper development of children.

To start the programme of Balwadi, an initial household-wise survey was conducted in the village to find out the target group and the opinion and participation potential of villagers with the help of schedules. Two schedules were filled up by (Km.) Renu Kamboj, (Km.) Upasana and ten girls of B.Sc. (Home Science) Ist year by interview method. One was related to physiological condition of children while the other related to child-care practices. All the components, which were related to pre-school children (0.6 yrs.) were taken in the schedule. To initiate the programme, a health camp was also organised to collect information related to children.

Shivaji University Mathematics Society

Shivaji University Mathematics Society, commonly known as "SUMS", is an academic body recently formed by the College and University teachers of Shivaji University. Its aims and objects are to create interest in Mathematics and Mathematical Sciences amongst the students, to popularize the subject and also to make known to them its applications. It imparts new ideas, new techniques, and also makes students and teachers aware of the latest developments in the subject. With this intention, it arranges *"Carnivals"* for students of Mathematics and conducts Quiz Tests in mathematics every year in different areas. It spots talented students and encourages them by giving prizes. It also arranges seminars every year at which eminent Professors of Mathematics are invited to deliver lectures for students, teachers and the lovers of Mathematics.

SUMS also tries to solve the academic problems concerned with the subject. It furnishes information regarding seminars, conferences, workshops and symposia to be held at national and international level and makes them research oriented by circulating the Bulletins.

News from Agril. Varsities

Enthusiastic Response to Correspondence Courses

The Directorate of Extension Education, Tamil Nadu Agricultural University has so far offered 93 correspondence courses each of three months duration since 1979 in major areas of crop science, animal science and horticulture. Average enrolment on payment of prescribed fees worked to about 40 candidates per course. Coursewise enrolment widely varied ranging from 10 to 250.

Among the major areas, animal science courses topped the list in participant enrolment. Horticulture courses ranked second and crop science courses occupied third position. Within the crop science, courses in specific areas of plant protection, water management, cash crops, forage crops and farm implements recorded enrolment more than the average.

Of the 93 courses, many of them were repeated more than once during the past one decade based on the farmers' need. Analysis of frequency parameter showed that courses in sericulture, poultry, dairy, vegetable, sugar-cane and water management were repeated five to nine times and all other courses only two to four times.

Enrolment for correspondence courses is voluntary. This implies that (i) farmers differ in the subject matter area requirements; and (ii) farmers need to know more at present on animal science and horticulture aspects compared to other subject matter areas.

Portable Tool to Aid Manual Threshing

A portable tool to aid manual threshing operation has been developed at the Tamil Nadu Rice Research Institute, Aduthurai. The tool is a slotted, sloping and curved threshing surface made of mild steel rod. This curved threshing surface is fitted over a 300 mm diameter 750 mm length coconut trunk with the help of four 'L' angle legs. Four 'L' angles of 33 x 33 x 75 mm are welded vertically at the four ends of nailed flats on trunk in such a way the threshing surface with 'L' angle legs can easily be inserted or taken out from the trunk by "Press fit" arrangement without bolts and nuts.

The threshing surface with legs weighing 12.5 kg can easily be separated or fixed. For proper anchorage of the unit over ground surface, the bottom of the trunk is flatened lengthwise and two wooden planks of 500 mm length are nailed at both ends perpendicular to longitudinal axis of the trunk. The tool was tested for its threshing efficiency with paddy varieties like ADT 38, ADT 39, IR 20, Co 43, White Ponni etc. and compared with conventional method of threshing over hard stone surface.

On an average, the threshing aid, helps to separate 88.94% and 91.20% grains from paddy crop by threshing paddy crop immediately after harvest and after one day field drying respectively. For conventional threshing over hard stone surface the corresponding values are only 81.41% and 83.67% respectively for thaladi crop.

By using this tool it is possible to separate @7% more grain from paddy crop and sell the same at higher price than poradi paddy (otherwise it ought to have gone with straw for poradi) and also to earn @ Rs. 125 to 150/- as additional income per acre. The labourers feel that the drudgery of threshing operation has been reduced slightly. The cost of the aid is only Rs. 175/- and can be easily fabricated.

News from Abroad

Research on Poverty Eradication

The Poverty Eradication Foundation, USA, has emphasised introduction of the subject of Poverty Eradication in the educational institutions. As an incentive, the Foundation will award grants to professors, students and other learned people in India to participate in short term research projects. The details of the scheme are asunder:

Eligibility

Non-political and non-profit projects or planned activities proposed to be undertaken with a purpose of reducing or eradicating poverty are eligible for a financial assistance from the Foundation. However, each project proposal must clearly indicate how the project results may contribute to poverty reduction efforts.

Types of Projects

There are four types of projects or activities for which the Foundation may provide financial assistance, i.e., (a) Research Projects, (b) Training or Skill Development Projects, (c) Demonstration Projects, and (d) Development Projects.

Outcome or end product of each research project should be new knowledge applicable locally or universally to help develop self-generating economies and eradicate poverty more effectively. Projects merely confirming the existing knowledge will not be acceptable for the Foundation's financial support.

Projects for training to help develop certain needed skills for productive jobs for which there is a shortage of trained or skilled persons are also acceptable for the consideration of financial assistance.

Due to the limited resources, the Foundation is unable to participate in demonstration projects and development projects, at the present time.

Financial Assistance

Financial assistance for eligible projects or activities is provided on a 50% matching basis, i.e., 50% of the total project cost must be financed through local sources. The Foundation prefers to finance short range (4 to 6 months) projects for which the Foundation's share of financial assistance does not exceed fifty thousand rupees (Rs. 50,000) and the projects with a potential to stimulate significant local interest for local fund raising for additional future projects. The Foundation shall be the sole judge in the matters of awarding or refusing financial assistance.

Mode of Payment

25% of the financial assistance will be payable upon project approval and an assurance from the

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Women's Studies Programmes and Women's Organisations

The Association of Indian Universities (AIU) is preparing a Directory of Women's Studies Programmes and Women's Organizations in India in collaboration with the Commonwealth of Learning (COL), Vancouver, Canada. The Association invites all such organizations working in any part of the country to get in touch with the Secretary at the following address for their inclusion in the proposed Directory:

The Secretary
Association of Indian Universities
AIU House
16 Kotla Marg
New Delhi 110 002

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applicant that the local share of the cost is available and work on the project will commence immediately and shall continue without interruption to the point of completion in accordance with the approved plan.

Additional 35% of the approved financial assistance will be payable upon 50% completion of the project and receipt and approval of an interim typed report on the project.

The remaining 40% of the approved financial assistance will be payable upon 100% completion of the project and receipt and approval of the final typed report on the project.

Project Proposals

Project proposals seeking financial assistance must include:

(1) Discussion on the goals, objectives, location, expected outcome and end product of the project;
(2) Explanation of the project design or work plan with various efforts involved in the project;
(3) Various tasks or activities with a definite time line and work program, and a periodic review of progress with a feed-back process;
(4) Names, qualifications, experience (resume of key persons) and salaries or monetary compensation of the various key persons involved in the project;
(5) Cost estimate of each task or activity supporting the project completion and the entire project including the monetary compensation for the involved persons, materials, contingencies and overhead expenses;
(6) An overview of the contents of the interim report to be submitted upon 50% of the project completion and the final report to be submitted upon 100% of the project completion;
(7) Techniques for measuring the effectiveness of demonstration and development projects;
(8) Signature of at least two authorized officers of an organization seeking financial assistance;
(9) Background of the organization seeking financial assistance; and,
10) Any other relevant facts or significant points that the applicant may like to include.

Proposals for assistance may be submitted to Shri T.S. Khanna, Founder, Poverty Eradication Foundation, 164-Canyon Vista Place, Danville, California 94526 (USA).

News from UGC

Countrywide Classroom Programme

Between 16th November to 22nd November, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

16.11.90

"Algebraic Structure – II: Relations and Mapings"

"Diversity in Unity: A Lecture by Prof. Yash Pal – I"

"Poetry on Roses"

17.11.90

"Consumer Protection – II: Right to Safety"

"Kuchamani Khyal – The Endangered Folk Theatere – I"

"Swimming"

18.11.90

No Telecast

19.11.90

"Classical Mechanics – 8: Minimal Principles"

"Theory of Games – II: Business Applications"

"Shake Table"

20.11.90

"Panel Discussion on Industrial and Technological Application of Carbohydrates"

"Study Skills"

"Rasashastra – I"

21.11.90

"Vibration – III"

"Biography – An Art"

"Nutrition & Immunology"

22.11.90

"COBOL – 9: Data Division – 3"

"In the Leser Beam"

"Tragedy – Aristotle to Brecht – II"

2nd Transmission
4.00 p.m. to 5.00 p.m.

16.11.90

"Fundamentals of Mechanics – I"

"Urban Survival – Women Workers in the Unorganised Sector"

"Disposal of Sewage Water in Oil Refineries"

17.11.90

"Rasa Ranjita: Understanding Indian Dance – 2: Kathakali – 2"

"UNICEF – First Forty Years"

"Reflections on Eisenstein"

18.11.90

No Telecast

19.11.90

"Classical Mechanics – 2: Galileo's Principle of Relativity – B"

"Appropriate Technology – II"

"Winter"

20.11.90

"Carbon – The Key to Organic Chemistry"

"Never Say Die"

"The Ray of Hope"

21.11.90

"Efficient Structural Forms – IV: The Vault & Dome"

"Architecture of Ghat Ki Guni"

"Plains & Plateaus"

22.11.90

"COBOL – II: Introduction"

"In Search of Ethnic Dimension – I: The Koyas"

"Siege of English"

NUCLEAR SCIENCE CENTRE

P.O. Box No. 10502
New Delhi-110067

Applications are invited for the post of Mechanical Engineer in the scale of Rs. 3000-100-3500-125-4500. The candidate must have a B.Tech./B.E. Degree in Mechanical Engineering. Minimum experience of 3 years of working and maintenance of a large Central Airconditioning and other mechanical system.

The post carries all benefits as admissible to Central Govt. employees. Accommodation, if needed, will be provided by the Centre against payment as per Central Govt. Rules. Application on plain paper giving detailed Bio-data along with passport size photo must reach the Director, Nuclear Science Centre, P.O. Box. 10502, New Delhi 110 067 by **30th November, 1990.** Persons selected will be required to join within one month from date of appointment letter.

Information Service to Researchers in Universities

The National Centre for Science Information (NCSI) offers upto date, computerised information services to the faculty members and researchers in Indian Universities and Colleges *free of charge*. Operating since 1984 from the Indian Institute of Science, Bangalore, the Centre has been set up by UGC. Its staff consists of computer scientists, information scientists and support personnel. Besides its own minicomputer facility, the Centre has access to the IISc DEC 1090 mainframe computer system. NCSI has arrangements with the world's leading abstracting services to regularly receive their database updates on magnetic tapes.

A researcher enrolled for this service will regularly receive abstracts of recently published literature pertaining to his area of research. This includes journal papers, conference proceedings, books, patents, technical reports, meetings, reviews, etc. Besides the abstract, each computer printout contains details of author, title, source, reference, author address, etc

The areas covered by the service are:

Physics: All areas of Physics, Electrical & Electronics Engg., Computers and Control and Information Technology—From INSPEC-I (IEE, UK) Database covering 'Physics Abstracts', 'Electric & Electronics Abstracts' & 'Computer & Control Abstracts'; **Chemistry:** Biochemistry, Organic Chemistry, Macromolecular Chemistry, Applied Chemistry, Chemical & Physical Engg., Inorganic and Analytical Chemistry—From CA-Search (Chemical Abstracts Service, USA) database covering 'Chemical Abstracts'; **Mathematics:** Statistics, Numerical Analysis, Fluid Mechanics and related fields like Relativity, Astronomy, Astrophysics, etc.—From MATHSCI (American Mathematical Society, USA) database covering 'American Mathematical Reviews'; **Life Sciences:** General Biology, Basic Medical Sciences, Micro-biology, Immunology, Public Health and Parasitology, Plantology, Sciences and Animal Sciences—From BIOSIS (Bioscience Information Service, USA) database covering 'Biological' Abstracts'; **Geology:** All aspects of Geology, Minerology and Crystallography, Hydrology and Geophysics—From GeoRef (American Geological Institute, USA) database covering 'Bibliography & Index to Geology'.

Software has been developed at NCSI to scan the database update tapes on a computer and to select abstracts that match the "User Profile". The profile of an user is constructed using keywords supplied by him/her at the time of enrollment. Through regular user feedbacks, these profiles are periodically updated to precisely match the user interests.

Currently the Centre has on its mailing list more than 2,000 scientists working in Universities and Institutions of higher learning all over the country and engaged in research in different areas of science.

If you are a researcher in any University or College, and wish to become a user of this *free service*, you may make your request for a 'Profile Information Sheet' to: Prof. V. Rajaraman, Chairman, National Centre for Science Information, Indian Institute of Science, Bangalore 560 012.

Book Review

A Significant Study

V. Natarajan*
Asha Arora**

Shah, Vinita. Human Resource Development in the Building Industry—A Study in Bombay. Bombay, National Institute of Construction Management and Research, 1990. pp. xii + 129. Rs. 150/- US $15.

Since the housing industry plays a significant role in the economic and social development of a country, "the training and skill formation programmes and other measures of human resource development in the building industry directly contribute to the upliftment of the socially backward and economically poorer sections of the society and improving the living standards of the underprivileged." This study sponsored by National Buildings Organisation and financed by the Ministry of Urban Development, attempts to investigate "the technical skills, social quality and job market conditions of the building workers in metropolitan Bombay" engaged in housing construction. The study is specific to three parameters, namely; geographic area i.e. Bombay; direct employer i.e. contractor; and productivity of labour i.e. Human Resource Development (HRD) and has the following two major objectives as outlined by the Investigators:

— To assess the training needs and social quality of building workers to study and analyse their levels of technical skills in building trades and methods of skill formation as also their socio-economic status, mobility and migratory patterns and working conditions; and

— To suggest measures of human resource development for upgrading and improving the productivity of industry, quality of structures and socio-economic conditions of workers training in various building trades, mechanism of skill formation, upgradation and certification as well as improving workers' wage-welfare-working conditions.

The study explores various aspects of skill formation and its upgradation including the related aspects of one segment of building workers keeping in mind the unique features of building industry like small enterprises, temporariness of work, contractual relationship etc., and suggests several policy measures and programmes/strategies for human resource development in building industry and skill improvement of these building workers and productivity of the building industry. The author and her team of competent research assistants should be congratulated to have brought forth a report on the socio-economic profile of the building workers in Bombay, building job market in the metropolis and the status of workers therein. The methodology used for the study is very exhaustive and the sampling is fairly large though it cannot be called representative of all building workers as the authors themselves realise the limitation of the study, i.e. building activity in metropolitan Bombay is not typical of smaller towns and rural areas. To the extent the study deals with the upper technical edge of housing construction, with building workers who are/may be qualitatively superior to their counterparts elsewhere in the country. The authors also concede that the sample does not reflect the relative strength of women workers who are denied representation due to them in the formal work systems, more so in building industry. But despite the vastness of the field and the limitations of the study, it explores exhaustively the plight of skilled unskilled building workers and brings out significant findings. It not only draws occupational job descriptions and skill standards for some building trades, but also makes some very valid recommendations for consideration by the Ministry of Urban Development, National Buildings Organisation etc., like constituting a Building Trades Testing and Certification Committee (BTTC) to evolve skill standards of various building trades and certification and thus improving and upgrading the skills formation of building workers and their socio-economic conditions with the objective of improving productivity and quality in building.

**Director (Research), AIU.*
***Research Associate, AIU.*

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to the AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

ADDITIONS TO AIU LIBRARY

Aggarwal, J.C. *Curriculum reforms in India: World overview.* Delhi, Doaba House, 1990. 296p.

Amrik Singh, *Ed. On being a teacher.* Delhi, Konark Publications, 1990. 208p.

Atma Ram. *Higher education in India: Issues and perspectives.* New Delhi, Mittal Publications, 1990. 112p.

Banerjee, Brojendra Nath. *Education cannot wait: A critical study of the New Education Policy.* Delhi, B.R. Publishing Corporation, 1990. 375p.

Desai, D.M. and Pandit, Sarswati S. *Growth and development of the Maharaja Sayajirao University of Baroda (1949-1967).* Baroda, M.S. University of Baroda, 1968. 126p.

Devarajan, G. and Rahelamma, A.V. *Ed. Library computerisation in India: Papers presented in honour of Prof. K.A. Issac.* New Delhi, Ess Ess Publishers, 1990. 163p.

Europa World Yearbook 1990. 2V. London, Europa Publications, 1990. 1519p.

Gangrade, K.D. and Misra, R.P. *Ed. Conflict resolution through non-violence: Role of the universities. 2V.* New Delhi, Concept Publishing Company, 1990.

Gupta, S.P. *Indian science in the eighties and after.* Delhi, Ajanta Publications, 1990. 120p.

Hommadi, A.H. *Higher education in third world.* Delhi, Indian Bibliographies Bureau, 1990. 240p.

Jayaram, N. *Sociology of education in India.* Jaipur, Rawat Publications, 1990. 250p.

Mcfarlan Donald, *Ed. Guinness book of records 1991.* London, Guinness Publishing, 1990. 320p.

Paxton, John, *Ed. Statesman's Year-book' 1990-91.* London, Macmillan Press, 1990. 1690p.

University Grants Commission. *Report of the curriculum development centre in Anthropology and Sociology.* New Delhi, Author, 1990. 278p.

————. *Report of the curriculum development centre in Biochemistry.* 1989. 87p.

————. *Report of the curriculum development centre in Biophysics.* 1989. 189p.

————. *Report of the curriculum development centre in Chemistry.* 1988. 257p.

————. *Report of the curriculum development centre in Commerce.* 1989. 370p.

————. *Report of the curriculum development centre in Economics.* 1989. 332p.

————. *Report of the curriculum development centre in Education.* 1989. 401p.

————. *Report of the curriculum development centre in English.* 1989. 371p.

—————— *Report of the curriculum development centre in Geography*. 1989. 278p.

——————. *Report of the curriculum development centre in Hindi*. 1988. 488p.

—————— *Report of the curriculum development centre in Mathematics*. 1989. 387p.

——————. *Report of the curriculum development centre in Philosophy*. 1990. 454p.

——————. *Report of the curriculum development centre in Sanskrit*. 1989. 773p.

—————— *Report of the curriculum development centre in Social work education*. 1990. 456p.

—————— *Report of the curriculum development centre in Urdu*. 1989. 305p.

—————— *Report of the curriculum development centre in Visual Arts and Design*. 1989. 142p.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities

HUMANITIES

Philosophy

1. Gopalakrishna, T. *A study into the secular values of Ramayana and their relevance to the modern society*. Bangalore. Dr. B.P. Siddhashrama, Reader, Department of Philosophy, Bangalore University, Bangalore.

2. Sinha, Premi. *A critical and reflective study of Kant's critique of theistic proofs*. Magadh.

Fine Arts

1. Kumawat, S.K. *Kalaguru Shri Devkrishan Jatashankar Joshi kee kala sadhana*. Vikram. Dr. R.C. Bhavsar.

Language & Literature

1. Ranjitha, J. Ananthy. *Writing non-literary languages in the Indian context with special reference to Kurux*. JNU. Dr. R.S. Gupta, Centre of Linguistics and English, Jawaharlal Nehru University, New Delhi.

English

1. Bose, M. Navaneetha Krishna. *Towards redesigning the English components of the pre-service course for teachers at the school level*. CIEFL. Prof. K.A. Jayaseelan, Department of Materials Production, Central Institute of English and Foreign Languages, Hyderabad.

2. Jade, Krishna Mahadeo. *A study of growth and development in the poetry of Nissim Ezekiel*. Nagpur. Dr. J.B. Paranjape, Department of English, Nagpur University, Nagpur.

3. Joseph, Ajay William. *Wordsworth: A comparative study of the prelude and the excursion*. Nagpur. Dr. P.S. Shastri, Prof. and Head. Department of English, Nagpur University, Nagpur.

4. Kulkarni, R.V. *Case in Marathi and English*. CIEFL. Prof. K.S. Yadurajan (Retd.), 30, First Main, Police Orchards (Lower), Bangalore.

5. Mahto, Panchanan. *On the nature of empty pronominals*. CIEFL. Prof. K.A. Jayaseelan, Department of Materials Production, Central Institute of English and Foreign Languages, Hyderabad.

6. Nagarajan, Hemalatha. *A theory of post syntactic phonology*. CIEFL. Dr. K.G. Vijayakrishnan, Department of Linguistics and Contemporary English, Central Institute of English and Foreign Languages, Hyderabad.

7. Parveen Kumar. *Individual and society in the fiction of James Jones*. Rajasthan. Dr. M.M. Rai Jami, Assoc. Prof., Department of English, University of Rajasthan, Jaipur.

8. Prahlad, S.R. *Adult Indian readers' recall and comprehension of stories: A scheme theoretic perspective*. CIEFL. Prof. R.N. Ghosh, Department of Methods, Central Institute of English and Foreign Languages, Hyderabad.

9. Radha, R. *Women as pioneer: A study in heroism of Willa Cather's protagonists in her novels*. Kakatiya. Dr. A. Jaganmohana Chari, Head, Department of English, Kakatiya University, Warangal.

10. Ranveer, P. Rukmani. *Encaged sensibility in the novels of Arun Joshi*. Kakatiya. Dr. A. Jaganmohana Chari, Head, Department of English, Kakatiya University, Warangal.

11. Srivastava, Harindra Nath. *Epic strings in the writings of V.D. Savarkar*. Nagpur. Dr. V.R. Kandey, Department of English, Nagpur University, Nagpur and Prof. V.B. Prabhudesai, Department of Marathi, Nagpur University, Nagpur.

12. Sunil Kumar. *Promoting professional development of teachers of English: Towards a holistic approach to inset*. CIEFL. Prof. R.N. Ghosh (Retd.), Central Institute of English and Foreign Languages Campus, Hyderabad.

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S.No.	Name of the Post	No. of posts	Age limit as on 1.12.1990	Pay-scale
1.	Registrar (Reserved for SC)	1	Below 50 yrs.	Rs. 3000-5000 (likely to be revised)
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The appointee will be responsible for all matters concerning maintenance of the buildings and roads, new construction activities and Electrical Maintenance and Installations. He will also be responsible to supervise the work of the Executive Engineers.

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M.K. Gangajaliwale
REGISTRAR

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Essential qualifications:
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(b) Atleast five years experience of teaching and/or research provided that at least three years were as Lecturer or in equivalent positions.
For Lecturer:
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and
(b) A Doctorate degree or research work or an equilly high standard.

Having regard to the need for developing interdisciplinary programmes, the degree in (a) and (b) above may be in relevent subject. Provided that if the selection committee is of the view that the research work of a candidate as evident either from his theses or from his published work is of very high standard, it may relax any of the qualification prescribed in (b) above for the post of Lecturer.

Provided further that if a candidate having a Doctor's degree or equivalent research work is not considered suitable, a person possessing consistent by a good academic record (weightage being given to M.Phil or equivalent degree or research work of quality may be appointed provided he has done a research laboratory organisation on the condition that he will have to obtain a Doctor's degree or give evidence or research work of equivalent high standard within eight years of his appointment as Lecturer failing which he will not be able to earn future increment until he fulfils these requirements.

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REGISTRAR

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Editor:
SUTINDER SINGH

UNIT
DEC 1990
C.F.T.R.I. MYSORE

Empowering Women in India
New Roles for Education

(Mrs) J.K. Pillai*

Women and Education:
Historical Perspective: Where women were

The most noteworthy feature of ancient Indian Education is the education of women. Women were given equal rights with men in all walks of life, including education. Ladies have been quoted as authors of some of the Samhitas of Rig Veda. We hear of lady philosophers and Brahma Vadinis who dedicated their whole lives to education. We find that women had the freedom to remain single as well as freedom to choose their life partners. We have ample evidence to prove that co-education existed in the Ashrmas. But as conditions changed, when girls started to lose the privileges of education, the marriage age came down, they lost their equality, came to be considered as mere possessions and by 100 A.D.i.e. Manu's time, they were ascribed completely to a dependent status. This lawgiver has said, "By a girl, by a young woman, or even by an aged, nothing must be done independently even in her own home". During the middle ages, seclusion or "Pardah" was added to the existing subordinate and subservient status of women and in course of time, women became completely illiterate and entirely dependent on men—father, husband and son, economically, socially and culturally.

All over the world, the movement for improving women's status has always emphasised education as the most significant instrument for social change. The social reformers of the 19th Century tried to use education more to ameliorate the position of women socially; they were able to awaken the consciousness of the nation to the evils of child marriage, sati, polygamy, enforced widowhood, dowry system, etc. Since the new western education which developed during the 19th Century invariably meant "a method of earning" and since women were not required to earn, it was not considered necessary for women to be educated. Learning to do household work was sufficient for her and so the parents were not keen to incur any expenditure in educating the girls till very recently.

Where women are—a situational analysis:
Progress since Independence

Literacy

During the present century, the country has made spectacular progress in promoting the interests of women. The literacy rate went up from about 7% in 1901 to 7.9% in 1951, 18% in 1971 and 24.88% in 1981. But there is still a wide gap between male and female literacy. This is obvious from the following table:

Literacy Rate in India

	1951	1961	1971	1981
Male	24.9%	34.4%	39.51%	46.74%
Female	7.9%	12.9%	18.44%	24.88%
Total	16.6%	24.0%	29.45%	36.00%

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* *Vice-Chancellor, Mother Teresa Women's University, 13, Race Course Road, Guindy, Madras-32.*

Among the males, the corresponding rise is from 24.9% to 46.7% i.e. the gap in percentage literacy points between male and female literacy has increased from 17 in 1951 to 22 in 1981. In absolute terms, too, the number of illiterate women has increased during this period from 158.7 million to 241.7 million. Women comprised 57% of the illiterate population in 1981 and girls formed 70% of non-enrolled children in the school age group. Three fourths of the 50 million children who are not enrolled in any school are girls. It is estimated that 30% of the total work of fuel gathering, fetching water and farm work is done by girls between 6 and 11 years. Almost the entire burden of sibling care is on the girl child.

Enrolment of boys and girls in school: A comparative picture

In 1951, enrolment of boys in the primary stage was 55% of the population in the corresponding age group and among girls, enrolment was only 20.1%.

At the middle stage, 4.6% girls enrolled as against 20.8% of boys.

At the secondary stage, for every 100 boys, only 16 girls enrolled. Enrolment of women in university education was about 11 for every 100 men.

In 1981, for every 100 boys, number of girls enrolled in the primary stage is 64, middle stage is 51, secondary stage is 31, university stage is 30 and vocational, technical education is 20. The male-female gaps have narrowed to a certain extent but girls are behind in numbers and the type of education.

Though the number of schools has increased phenomenally, in classes I to V, (age group 6-11 years) one out of every three girls is still outside the school. The dropout rates for girls is very high, of every 100 girls in Class I, only 30 reach Class V. In Classes VI-VIII (age group 11-14 years) only 27 out of every 100 girls are at school as compared to 54 boys in this age group. At the secondary stage: i.e. Classes IX to XII, (in the age groups 14-17 years) only 20 out of every hundred girls are in school as against 39 boys. Girls form less than one third of the total enrolment at the secondary level.

Girls' position is worse in vocational, professional and other special schools at the secondary level. Girls go in only for female sex typed courses such as nursing, teacher training, home science, music etc. and very few girls enrol in technical courses leading to industry.

Female enrolment in higher education has gone up more than twenty points since 1951, the proportion of women to every hundred men at the University stage has increased from 14 to 40 in the thirty years. But a large number of girls opt for general arts, humanities courses. In 1981, of every 100 girls enrolled, 56 were in Arts, 21 in Science, 13 in Commerce, 7 in Engineering and 3.6 in Medicine. The number of women per 100 men, faculty-wise was 60.5 in Arts, 40.4 in Science, 19.2 in Commerce, 91.9 in Education, 4 in Engineering and Technical Education, 32.5 in Medicine, 2.6 in Agricultural and 7.4 in Law.

There is uneven rate of progress of all levels of education not only between states but between different levels of education in the same state. There is vast disparity between education of girls in rural areas and urban areas. There is a big gap between enrolment of girls belonging to the scheduled caste/tribe and other castes. Girls belonging to scheduled caste and tribes are also lagging behind boys belonging to SC/ST.

Labour force participation of women in India

The pattern of women's participation in the labour force can indicate women's education is preparing them for participation in national development on equal terms with men.

We find the work participation rate of women is low in India, has declined from 33.7% in 1911 to 20.85% in 1981 the corresponding rate of male work participation in 1981 being 52.7%.

If we look at the distribution of workers by individual category, 80% of the women workers are engaged in agriculture, 13% in organised sector of the economy and the rest in unorganised non-agricultural occupations. Of these women workers, more than 89% are illiterate, about 50% of the total 'non working' women are engaged in household activities, hardly 0.2% are women of independent means. Even in the administrative services like IAS, IFS, where there is no sex discrimination, hardly 7.5% are women. The incidence of unemployment also is high in that, they account for 40% of the total unemployment, which is higher than their share in the labour force which is 33%. The wage differentials between men and women continue to exist inspite of legislation enacted for "equal pay for equal work". It is also found that women are predominantly employed in consumption linked services and not in production linked industrial occupations. Female workers are concentrated in unskilled, low status, low prestige, dead end jobs such as midwives, health visitors, clerks, teachers, unskilled office workers, food preservers, canners, nurses etc. Thus we can see that women are huddled at the lowest occupational structure of the modern sector and the males continue to dominate the top echelons.

Studies also show that mechanisation and modernisation have marginalized women in many sectors. They are being pushed down or out of the work force.

The average hours of unpaid work done by women outside their homes in rural areas vary from 6 to 7 hours a day. But their access to ownership of land and other productive resources remains negligible.

30 to 35% of the rural households are headed by women due to male migration or abandonment.

Women comprise only 7.5% of the membership of registered trade unions, hardly one percent being office bearers. Representation of women in elected offices has remained stagnant, inspite of the increased voting turn out in general elections.

Other indicators of women's status

Age specific death rates indicate higher rates for female child. The fertility rate has not declined to the desired extent, the average number of children born to a woman in her life-time being 4.6. More than half of the women do not get sufficient dietary intake of calories, proteins, calcium, iron, vitamin A. Two thirds of the pregnant women are anaemic; crimes against women continue unabated. There is resistance to prohibition of dowry. The projection of women in the media as sex objects, man eaters, or long suffering martyrs, accepting humiliation and illtreatment glamourize their powerlessness.

Some positive indices are:

The expectation of life at birth is 52.9 years in 1981 and it has risen from 44.7 years in 1961.

The sex ratio has registered a slight increase, from 930 women per 1000 males in 1971 to 933 in 1981.

The average age at marriage has reached 18.3 years in 1981 as against 17.1 in 1971.

The focus in the programmes for women has shifted from welfare to development and empowerment.

Where Women Might Be

What is the cause of her powerlessness?

Herself or her nature?
Is she inherently weaker?
Is she a parasite?
Does she naturally need a support?
Is her femaleness the cause of all trouble?

There is a lot of confusion in people's mind regarding nature i.e. the inborn traits of women and nurture, i.e., the socialisation process that makes her what she is. There is also confusion between sex i.e. femaleness and maleness and gender i.e. the role of a male or female as perceived in the society.

The root cause of women's oppression is patriarchy, which has snatched legitimate powers from women, making them totally defenceless and powerless. Hence women need to be empowered for undoing the injustice meted out to them.

Empowerment process

Empowerment is an active, multi-dimensional process which should enable women to realise their full identity and powers in all spheres of life. It would consist of greater access to knowledge and resources, greater autonomy in decision making, greater ability to plan their lives, have greater control over the circumstances that influence their lives and free them from shackles imposed on them by custom, belief and practice. Generally, development with justice is expected to generate the forces that lead to empowerment of various sections of population in a country and to raise their status.

But, power is not a commodity to be transacted. Power cannot be given away as alms. Power has to be acquired and once acquired, it needs to be exercised, sustained and preserved. Women have to empower themselves. Unless they themselves become conscious of their oppression, show initiative and seize the opportunities, it would not be possible to change their status.

The empowerment mechanism is easily enumerated

higher literacy and education
better health care for herself and her children
higher age at marriage
greater work participation in modernized sector
necessary financial and service support
advancement into higher positions of power
better consciousness of their rights
self reliance, self respect and dignity among women

What is the role of education in this process of empowerment? How do we operationalise these concepts?

How Education can be used for Empowering Women

Education for National Development

Education was for long dissociated from the idea of nation building. It was viewed as a process for infusing piety, during the ancient period. It was then seen as a cultural process, to transmit the accumulated wealth of knowledge, to impart classical values, and to build character of the individual. It was essentially for a privileged few and hence was not really contributory to the development of the nation as we understand today. When the demand for women's education started in the 18th century, it was more in the light of women's rights, for the access to knowledge and not as a national economic asset. Then the attitude changed and for the first time, the UNESCO Conference in 1962 underlined the importance of the access of girls and women to technical and vocational education for economic and social development.

According to Gunnar Myrdal (1969), education has an independent as well "instrumental" value, i.e. the purpose of education must be to rationalise attitude as well as to impart knowledge and skills. Education for national development should include education for self reliance, personal development, social development, productive capacity, social integration and political understanding.

Do we educate our girls for such an integrated development? What type of education should we plan? What type of curriculum should we develop to train the intellect, to discipline the emotions for social advancement and for creative contribution of our girls? Is it enough to merely train her for her future career as wife and mother? Shall we continue the present system where the girls are educated merely to obtain a degree which is a passport to matrimony? Or, should we educate her according to her aptitude and ability and help her to attain the fullest possible development in all respects, personally, socially and economically and thus lead a complete life?

Harnessing women power: Rationale

The Indian constitution has guaranteed "Equal rights and equal opportunities to all its citizens, irrespective of sex, age, race or religion". The rights are guaranteed by law, but yet to be legalized in custom.

The International Conference on public education convened jointly by UNESCO and the International Bureau of Education, in Geneva 1952, while discussing the question of access of women to education, made the following recommendations to ministries of education of all member countries.

1. Every person, without distinction of sex should enjoy all the rights and freedom proclaimed by the universal "Declaration of Human Rights", and that such equality should apply in all fields, particularly that of education.

2. Every person, man or woman should be able to receive an education enabling him to develop his aptitude as fully as possible, playing an effective part as member or citizen of his community, his nation and the world and meet the demands of his special tasks in life.

3. Women, like men, should have opportunities to fulfil the tasks appropriate to their aptitudes.

4. General education should be equal in value and status of that of boys and thus avoid social discrimination.

With the recognition of women as human beings having equal rights with men, has risen the parallel concept of equality of contribution of public and private life.

The constitution has granted social and political equality; perhaps India is the first country which decided on adult suffrage at the start of a parliamentary democracy and gave the rights to women at the same time as men. Political franchise extended to women would become meaningless if they are not able to understand the issues their votes are to decide. Social equality is practised by millions of women who have come out of their seclusion; a few pockets or orthodoxy still continues to react.

In the sphere of economic activity very few women have developed the ability to stand on their own feet and be completely independent. Majority of women follow merely the profession of matrimony and remain dependent on men. Women have to be trained for economic emancipation. The participation of women in social, economic, political and cultural life would decide the country's advancement and success.

Career training for Women

All over the world, education is being reshaped for the following reasons:

More and more linkages are being developed between education and work; there is a great concern for the rising rates of youth unemployment. There is a great need to create a labour force which would be capable of working in the growing complexity of technological application; proper attitudes and skills for employability have to be developed among the youth; there is a shift in proportion of women leaving the home and entering the work force. All these points to the need for an adequate programme of career guidance for the school leavers.

There should be increased access for women to vocational, technical and professional education and to the existing and emergent technologies. The choice of disciplines offered to women at all levels in all types of technical education should be in keeping with the objective of bringing about women's equality. The identification of some skills and occupation as 'suitable' or 'relevant' to women should no longer dictate the choice of subjects. The selection of subject should be based on the aptitude of the individual and the employment potential. Adequate counselling services should be made available to all the students.

The most serious omission in conceptualizing career choice is the consideration of the effects of sex role socialisation on the decision making process. Career choices and career decisions are influenced by the decisions about marriage, parenthood, female-male responsibilities in home making etc. Social norms and expected sex roles also have an impact on career decision. Women are really not free to explore their interest and make choices with a more conscious perspective. Girls' capabilities are usually under estimated by the parents, teachers and the society. Indian girls have not been trained adequately by the educational institutions to be able to battle on their own and hence they give way to pressure and thus we find a vast number of able women ending up in low status, low paid jobs. Again, in a conservative society like India, aiming high in the external world of success and power by women is not realised. Usually, girls are not taken seriously as careerists as career is considered to be of secondary importance. Marriage is the principal determinant of a women's social position and it is more important to get married to men with high paid jobs. The traditional myths such as—girls do not need to work, the husband's duty is to support them, women's work is in the house, and those who work outside neglect their homes and children; women may work until they marry; married women and mothers are not reliable workers; women are poor at qualitative analysis and unable to make tough decisions etc.—continue to influence women's career and act as barrier to women's advancement into senior positions.

If girls' careers are to be taken seriously, the significance of subjects like science and mathematics should be explained to them in the middle school itself. Guidance should be given to them at the school stage itself for developing self confidence, assurance and strength. They have got to learn to be assertive, firm and dynamic. Teachers should give extra encouragement to girls both to believe in their own ability and a sense of self worth. Education should help in training of skills such as overcoming fear of failure, coping with stress, developing resistance to criticism and willingness to take risks.

Curricula and textbooks should be redesigned to include values and processes commensurate with the new status of women.

Values identified are:

(1) home management, a joint responsibility of all members

(2) respect for the roles performed inside and outside the home

(3) equal commitment for work at home and outside by both the sexes

(4) equal participation in the development of the nation

(5) decision making process at all levels to be shared by both the sexes

(6) women not to be projected as sex symbols or prosperity symbols

(7) no dependence syndrome but women to be self reliant, self propelled and self directed

(8) no degrading of women in matrimony—such as bride price, dowry, sati etc.

(9) development of vocational skills and competencies for economic independence.

Empowerment of rural women should be the priority area of non-formal, adult and continuing education programmes. Stress on need based functional education and skill development in the practical utility areas would attract enrolment of girls in non-formal education. People in mass media, folk media, functionaries of voluntary agencies, performing artists and creative workers should be sensitized to promote the identified values of empowerment of women. ☐

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FACETS OF CONTINUING EDUCATION

P. Adinarayana Reddy*

Explosion of knowledge due to rapid growth of science and technology has made the common man search for an alternative system of education to keep abreast of the latest developments to update his knowledge or skills, to adjust to new environments and situations to improve educational level. One such system of education is the continuing education. The term is often used interchangeably with out-of-school education, follow-up education, further education, community education and life-long education. The modes of delivery of continuing education are mostly non-formal and it is often grouped under non-formal education.

Continuing education programmes are being organised in the belief that education is a life-long process and it does not stop with schooling or with university education. Further, even such people who obtained high level of advanced education have to refresh their knowledge in order to adjust to the growing complexities of life and society. The continuing education for the low educated people is aimed at retention and consolidation of literacy skills. Continuation of learning beyond the learning skills is in order to convey adequate basic education and application of learning for personal, social and vocational development. Continuing education is a means to bring higher education within the reach of a far large segment of population, as 60 percent of the children dropout between class I-V, 75 percent between class I-VIII, and 94 percent between class I-XII. It clearly demonstrates that continuing education should be concentrated at lower levels and professional education (Training) for those who have undergone higher education. The enrolment figures in case of girls show that only a few reach higher education. Hence, girls and women should be given priority in continuing education.

The Asian and Pacific Programme of Education for All (APPEAL) which aims at illiteracy eradication by the year 2000 AD has three components viz., illiteracy eradication, universalisation of primary education, and continuing education. According to APPEAL, continuing education refers to two main categories of programmes viz., programme supportive of universalisation of primary education and literacy programmes; Secondly, that type of continuing education which goes beyond universalisation of primary education and literacy. The objectives of continuing education for development as spelt out by the APPEAL are:

(a) To provide continuing learning opportunities to children, youth and adults to follow up initial education whether obtained through primary education or through adult literacy programmes, and
(b) enable them to apply their learning to the development of their own personal life and of their community.

Continuing education was given a fresh impetus in the National Policy on Education—1986 (NPE) and Programme of Action—1986 (POA). The POA, however, goes beyond continuing education, and its instrumentaties include:

- Establishment of JSNs for a cluster of villages with a total population of 5000;
- Systematic workers' education by employers, trade unions and concerned government agencies;
- Post-secondary educational institutions including universities, colleges and polytechnics to give impetus to extension work;
- Book promotion on the lines indicated by the policy;
- the use of technology, radio, TV and films for education and recreation; and
- large scale organisation of non-formal, vocational and technical education programmes specific to the needs and interests of learners.

Clientele

Majority of our people are illiterate, ignorant and poverty stricken. Of the total 78.4 crores of population, only 36 percent are literate which includes, neo-literates, school dropouts to highly professionally trained. The programme of continuing education has to support all these people capable of performing such public roles as simultaneously meet their self-fulfilment and self-development needs. Continuing education in India therefore refers to atleast two quite distinct categories of education viz., highly specialised professional training or retraining in emerging professions, such as those related to computer work and liberal arts education on the one hand, and more basic education for survival of millions of our population for self-development, fulfilment of needs, information dissemination, utilisation of leisure time for productive work, for the promotion of culture, including music, dance and handicrafts.

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* *Project Officer, Dept. of Adult, Continuing Education and Extension, S.V. University, Tirupati-517 502. A.P.*

Continuing education is first and foremost a second opportunity for education. It is a substitute and an alternative to formal education i.e., from the primary level to higher which some people might have missed due to socio-economic, cultural reasons and other factors. It almost always includes literacy education for illiterate, post-literacy and continuing education for semi-literate, higher educational opportunities for school and college dropouts, refresher education for specialists and so on.

Continuing education programmes are being organised by different agencies, institutions at various levels to meet the needs of the wide variety of clientele groups.

Delivery Mechanism

It is universally recognised that the socio-economic development of the country is directly related with the education possessed by its population. Keeping this in view the Govt. of India has included non-formal education component in all the developmental programmes with the hope that better informed target group will utilise the facilities and opportunities created under different welfare programmes. Further, the seventh Five-Year Plan clearly stated that "all developmental programmes, especially those affecting the rural and urban poor will be required to include a component of adult education and literacy aimed at the needs of the beneficiaries of those developmental programmes". Some of the schemes of different departments of Govt. of India under various ministries having non-formal education component and non-governmental agencies viz., the voluntary organisations, universities and other agencies involved in continuing education programmes are given below:

I. Ministry of Agriculture

(a) Department of Agriculture:

1. Exchange of Farmers within and outside the country; 2. Study Tours of Farmers/Farm Women belonging to weaker sections (Scheduled Castes and Scheduled Tribes); 3. Scheme of Farmers' Training and Education; 4. Reorganised Agricultural Extension System known as Training and Visits System (T & V); and 5. Scheme for Training of Farmers, Owners of Tractors and Agricultural Machinery and young entrepreneurs in proper operation and maintenance of tractors and other agricultural machines and implements.

(b) Department of Agricultural Research and Education:

1. Krishi Vigyan Kendra (Farm Science Centre); 2. The National Demonstration Programme; 3. Operational Research Project; 4. Extension Education; and 5. Pilot Project for Training Personnel for a Cadre of Self Employed, Rural Soil Health Care Workers.

(c) Department of Rural Development:

1. Integrated Rural Development Programme (IRDP); 2. Training of Rural Youth for Self-Employment (TRYSEM); 3. National Rural Employment Programme (NREP); 4. Industries, Services and Business Component of IRD (ISB); 5. Special Livestock Production Programme; 6. Drought Prone Areas' Programme; and 7. Desert Development Programme.

II. Ministry of Commerce

1. Training schemes in Handicrafts and carpets

III. Department of Cooperatives

1. Cooperative Education

IV. Ministry of Human Resource Development

(a) Department of Education:

1. Education through correspondence; 2. Adult, Continuing and Extension Education; and 3. Experimental Projects for non-formal education for children.

(b) Department of Social Welfare:

1. Integrated Child Development Services Scheme; 2. Scheme for the Welfare of children in need of care and protection; 3. Functional Literacy for Adult Women; 4. Socio-economic Programme for Needy, Destitute and Physically Handicapped; and 5. Condensed courses of Education for Adult Women.

(c) Department of Culture:

1. Libraries; 2. Museums and Art Galleries; and 3. Cultural Programme.

V. Department of Science and Technology

1. Schemes for promotion of scientific activities for reaching wider cross section of society:

2. Promotion of scientific interest in youth;
3. Technology development for artisans, landless labour, scheduled castes and scheduled tribes and other weaker sections; and
4. Science and technology for women.

VI. Ministry of Health and Family Welfare

(a) Department of Health:

1. National Malaria Eradication Programme; 2. National Filaria Control Programme; 3. National Leprosy Control Programme; 4. National Tuberculosis Programme; 5. Sexually Transmitted Diseases Control Programme; 6. Diarrheal Disease Control Programme; 7. National Goitre Control Programme; 8. National Programme for Control of Blindness; and 9. Expanded Programme of Immunization

(b) Department of Family Welfare:

1. Central aid for health and family welfare to voluntary organisations, and 2. Family welfare programme in the organised sector.

VII. Ministry of Home Affairs

1. Aid to voluntary organisations; 2. Grih Kalyan Kendras; and 3. Integrated Tribal Development Projects

VIII. Ministry of Information and Broadcasting

(a) All India Radio:

1. Programmes of Farm and Home Units; 2. Farm school on-the-Air; 3. Programmes for Industrial Workers; 4. University on-the-Air; 5. Programmes for women; 6. Non-formal education for youth; and 7. Yuva Vani (voice of youth).

(b) Doordarshan:

1. Programmes on agriculture for rural audience and farmers; 2. Programmes on civic education; 3. Programmes on science and scientific attitudes; 4. Art and Artistic Appreciation; 5. Programmes on Health Education; 6. Programmes for Women; and 7. UGC Programmes of Higher Education.

(c) Scheme of the Directorate of Advertising and Visual Publicity.

(d) Schemes of Publications Division.

(e) Schemes of Song and Drama Division.

(f) Schemes of the Directorate of Field Publicity.

(g) Film Division.

IX. Ministry of Labour

1. Central Board for Workers' Education—Workers' Education.
2. Department of Labour—National Labour Institute.

The voluntary organisations working at national, regional level for the upliftment of the poor in terms of socio-economic and cultural fronts are organising continuing education programmes as one of the components of developmental activities directed towards their target pupils to educate and to create awareness about their rights in utilising their share in the developmental programmes initiated by the governmental agencies.

The other agency which has lion's share in this task is the universities. The universities are organising, short term courses, refresher courses, workshops, seminars and conferences for various categories of pupils to upgrade their knowledge and skills in their specialisation. The academic staff colleges of the universities are catering to the needs of the academic community through its orientation, re-orientation and refresher courses organised for specialists and in special subjects. Apart from this, the universities through their distance education/correspondence courses are providing higher educational opportunities to all those who could not continue their education for one reason or the other.

The other agencies that are involved in this sector are the trade unions, mass media agencies viz., Radio, TV, Newspapers, periodicals and specialised magazines etc.

What is to be done

The continuing education programmes are in operation for quite a long time through one form or the other provided by different agencies for different categories of target groups at various levels. In order to improve the quality of the programmes to make these relevant to the present day circumstances, to create a desire among the target groups, workers and teachers who wish to improve their level of education to attain competence for vertical mobility on the job, housewives and other individuals wishing to make creative use of leisure time, a wish to acquire new knowledge and skills, restructuring of these programmes are warranted. Some of the suggestions to improve these programmes are suggested below.

Most of our population i.e. more than 64 percent are illiterate but involved in one profession or the other. The continuing education should be provided to these people in order to increase their professional skills, competencies and the quality of life. The strategy to be evolved is to ensure the participation of mass media agencies especially the oral and visual media in providing continuing education based on the needs, problems and interests of these people.

Continuing education should be viewed as supporting programme of both the literacy programmes and universalisation of primary education. It is not an addition of education received at childhood, but is advancement from childhood education.

The facilities and resources that are available for the organisation of non-formal education centres, adult education centres, and ICDS centres at the community level should be made available to provide continuing education to the community.

One of the most needy in terms of education are Women. Hence there will be no "Education for All", if serious efforts are not made to improve the provision of continuing education for women. These women need to be functionally as well as legally literate to play their role effectively in the society. In addition, occupational opportunities in vocations traditionally considered inappropriate for women should now be extended to them. The continuing education activities especially formulated for women should cover basic education such as literacy, post-literacy, upgrading the vocational skills and other aspects like health, nutrition, family planning, child rearing and the promotion of social and civic awareness.

Jana Shikshan Nilayams (JSNs) are being established under National Literacy Mission to create an environment conducive to continuous learning in the villages having population of five thousand or more to cater to the needs of five or more hamlets. But in order to cover all the population and to provide efficient service, a JSN per population of one thousand should be established. The Prerak, the in-charge of JSN, should be trained to be able to conduct coaching classes for those willing to appear for Xth Class or any other public examination.

The libraries should be strengthened to cater to the needs of the people especially the rural people by providing an opportunity to continue their education by providing suitable materials, facilities for preparing higher education examinations. Further, libraries should be equipped to organise short term courses, ranging between one week to six weeks, on various aspects based on the community needs and interests.

The universities with their departments of Adult, Continuing Education and Extension should respond to the needs of the students, teachers and community through its adult literacy, community based continuing education programmes and extension activities. The Population Education Clubs established both at university and affiliated colleges under this department should organise awareness campaigns to create consciousness among the community about the small family norm, family welfare programmes, family planning methods and ill effects of population explosion.

Community should be involved at all stages of the organisation of the continuing education programmes starting from planning to evaluation of the programmes for successful organisation of the programmes.

The services of the mass media agencies viz., newspapers, radio, TV, and films should be utilised at the regional and the national level to create conducive environment for the promotion of continuing education as these are the agencies which reach the people on a large scale within a short span of time at least cost.

Continuing education is the only hope to bring higher education within the reach of a far larger a segment of population at all ages by creating an open channel through the TV, radio and correspondence courses by easing the entry requirements, by charging less cost, and by providing generous grants to poor students.

The activities under this programme being implemented are many faceted, involving governmental and non-governmental agencies including national institutes and universities. In such multi-ministry or multi-agency relationship, coordination and monitoring of implementation process is complex and problematic. Hence, concerted efforts towards inter-agency coordination would be an important initial step in effective organisation of continuing education programme and to avoid duplication and wastage of men, material and money.

The key principle on which the concept of continuing education is founded is that it will take into account the felt needs, rather than the ascribed needs of the community. Hence, efforts should be made to move towards decentralisation of planning, curriculum development and design of the programmes by assigning these tasks to the DIETs, and DRUs. DIETs and DRUs should be strengthened in every district with more human resources to render qualitative services.

Voluntary organisations should come forward in great number to take lead in this sector by starting continuing education programmes for the school dropouts and the adult literates to improve their educational standards.

(Contd. on page 12)

TEACHING Vs. LEARNING

Mathetics in Place of Pedagogy

Jagannath Mohanty*

What is teaching?

Henry Von Dyke has beautifully posed as well as answered questions relating to the importance and meaning of teaching. He has said, "And what is teaching? Ah! there you have the worst paid and the best rewarded of all vocations. Dare not to enter it unless you love it. For the vast majority of men and women it has no promise of wealth and fame, but they to whom it is dear for its own sake are among the nobility of mankind. I sing the praise of the unknown teacher, king of himself and leader of the mankind." This, we may say, is the philosophical meaning of teaching, but very relevant and meaningful to a teacher.

Of course, we cannot measure the significance of teaching by mercenary standards. It can be gauged only in terms of emotional and psychological satisfaction. Teaching is not a mechanical process of transmitting knowledge and information from the teacher to the student. It is not a monologue but a dialogue. In the dialogue one may be vocal and another not so vocal, but can give vent to his feelings in the form of queries through facial expressions and some sounds of exclamation or irritation.

Teaching is regarded as an art. Like a piece of music or painting, it touches heart, brightens the mind and gives pleasure to everybody. It has to inspire and motivate the learner to go ahead on the road of exploration and discovery, to open new vistas and to reach new horizons. But traditionally teaching is equated with telling. The old concept of teaching as giving of information has been discarded by psychologists. Now the educationists feel that teaching is to motivate the student to learn and acquire the desired knowledge, skills and also desirable ways of living in the society. The main objective of teaching is to enable the pupil to respond to his environment effectively.

According to Burton, "Teaching is the stimulation, guidance, direction and encouragement of learning." This comprehensive meaning of teaching says that learning should be stimulating, guided, directed, and encouraged through teaching. Teaching is thus a communication between two or more persons who influence each other by their ideas and learn something in the process of interaction. Robert Gagne (1965) defined teaching in a psychological manner when he said, "Teaching means arranging conditions of learning that are external to the learner. These conditions need to be constructed in a stage-by-stage, each stage is the just acquired capabilities of the learner, the requirements for retention for these capabilities".

Teaching, to be precise, is a process of communication for achieving certain objectives. These objectives, of course, should be desirable and specific to various groups of learners. Kulkarni (1986) has therefore defined teaching as "the process wherein conditions are deliberately created (environment organised) to enable a specified learner (or group or learners) to behave in a specified manner, to perform or to experience certain desired objectives". Teaching thus aims at helping learners to learn or change their behaviour in a relatively permanent manner and involves arrangement of situations for facilitating learning.

The important general maxims of teaching are: it should proceed from the known to unknown, from analysis to synthesis, from the simple to complex, from the whole to part, from concrete to abstract, from the particular to the general, from empirical to rational, from psychological to logical and so on. Good teaching recognises individual differences among students; it should be interesting and need based. It should be challenging as well as sympathetic to the learner. It ought to promote productivity and self study. Teachers should take the social and psychological background of pupils into account. Good teaching should be dynamic and well planned. Teachers in order to make their teaching effective need acquaint themselves with curriculum, school routine, standard of the class, and if possible, brief bio-data of students. Successful teachers should project themselves as sympathetic and sincere, warm and friendly persons to their pupils.

What is learning?

In layman's languague, living is learning. As we grow,

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* *Director, Academic Staff College, Utkal University, 205 A-Saheed Nagar, Bhubaneswar-751 007.*

we learn, we are apt to learn than any other living beings. We adjust with our environment better than any other being. We influence our environment and the environment also influences our living styles. The interaction between the living being and environment results in the change of behaviour and such change is learning.

That is why, learning is called the modification of behaviour. It implies change in knowledge, understanding, skills, interests, habits, attitudes and so on. Learning thus consists of all changes in thinking, feeling and doing in course of life. The human child is the most helpless of all creatures and his helplessness is again longer than that of any other living being.

It is said that such helplessness of the human child gives a greater scope for learning. The world is full of problems. The human being faces problems in his every day life. But he tries to solve them with his own knowledge, insight, reasoning, skills and techniques of adjustment. Human life is thus a continuous process of learning, a series of experiences gained through living.

Skinner has therefore defined learning as "a process of progressive behaviour adaptation". Crow & Crow have considered learning as "the acquisition of habits, knowledge and attitude". According to Munn, learning is "more or less permanent incremental modification of behaviour which results from activity, special training or observations".. Mc Connel has precisely defined learning as "the modification of behaviour through experience."

Kulkarni (1986) has summed up all these elements of learning in his definition. According to him learning means "relatively permanent change in behaviour which occurs as a result of experience or practice". On the whole learning can be defined as the process of effecting changes in behaviour that brings about improvement in our relations with environment. Learning is rightly called the pivotal issue in education. The main aim of education is to effect desired changes in the behaviour of students. Learning is thus a natural outcome of the individual attempts to meet their basic and normal needs.

The learner cannot afford to be passive in the process. He has to interact with his environment. Learning is a complex process by which an organism faces new problems, acquires new knowledge, develops new mode of behaviour which tends to persist and create a general behaviour pattern of organism in more or less degree. All this brings about changes of behaviour—in doing, expressing one's thoughts, feelings, attitudes—called learning.

Learning is a process which involves changes taking place over a period. There are various aspects of the process of learning which need be taken care of for ensuring its effectiveness. These aspects are for example, needs of the learner, readiness to learn, conditions of learning, interaction and so on.

As regards its main characteristics, learning is growth through experience; it is an adjustment to the environment; it is a synthesis of old and new experiences; it is purposeful and intelligent; it is both individual and social; it affects conduct of the learner. There is difference in adult learning and child learning. For instance, the adult learns through concentration of mind on essentials which are useful and rejecting the useless, children, on the other hand, learn through all senses in a natural and active way. The vastness of adults' experience may help or hinder their learning, whereas children's learning is immensely promoted due to his strong spirit of curiosity, inquisitiveness, free and frank mind towards the outside world. Therefore, children should not be forced to learn in adult ways and methods with narrow utilitarian objectives.

Teaching Vs. Learning

Prior to this century teaching was considered as a rigid, formal and stereotyped process of transmitting knowledge, facts and figures. Education was taken as bipolar process with teachers at the giving and students at the receiving end. Teachers were deemed to be the only source of knowledge, maybe through manuscripts and printed materials. Schools were the knowledge shops and teachers the information managers or vendors. Methods of teaching were logical, sequential and routine without the best attention to the psychological needs and conditions of learners—their interests, curiosity, freedom and flexibility. Emphasis was laid on rigid discipline, blind memorisation and hard reinforcement. Verbalism was enforced and no audio visual aids

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

or materials were utilised in the field of education.

The learner was always kept at the receiving end and was considered as an empty vessel to be filled up with knowledge and information, facts and figures. At the advent of the 20th century a child is considered a tender plant whose growth is facilitated by the teacher as a gardener. The child is taught according to his abilities, attitudes, interests and aptitudes. He is helped to learn and to grow. Now to teach is to nourish or cultivate the growing child or to give him intellectual exercise or to train him in the horizontal sense of directing or guiding his growth. Children are motivated to search and experiment, to gather facts and information. They learn by doing and learn how to learn both individually and in groups. Various media and materials are used for making learning more interesting and effective.

Recently, learning has assumed more importance than teaching. It has been rightly observed by the International Commission on the Development of Education, (1972, p. 150) that there has been a change in the learning process which is tending to displace the teaching process. New theories of learning highlight the principle of contiguity and the importance of needs and motivations, of choice of content, of the hierarchic nature of learning, the interrelationship between educational content and environment etc. Multimedia system have now acquired more significance and educational technology has been popularly used for effectiveness.

Now stress is on the mathetic principle of learning rather than on the traditional pedagogic principle of teaching. Mathetics, the science of the pupil's behaviour, has recently got more importance than pedagogy, the science of the teacher's behaviour. The term "mathetics" is derived from the Greek root signifying the learner and the process of learning is given high priority. The mathetic principle is now used for designing various programmes for individual learning by pupils. Thus pedagogy has given place to mathetics and teaching to learning. ☐

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Facets of Continuing Education

(Contd. from page 9)

These programmes should not only cover the educational aspects but should be integrated with other developmental aspects.

The autonomous bodies like the Central Board of Workers Education, Khadi and Village Industries Commission should pay particular attention to organise continuing education programmes. The Khadi and Village Industries Commission should focus its attention to organise people's education programme both at community level and also for the student community to create an awareness by organising seminars, symposia, debates, extension lectures and study circles about the village industries and their role in rural economy and development. The Central Board of Workers Education should encourage the workers to continue their education by providing incentives.

Conclusion

The fast changing technology and new findings in research are forcing those who did not need or could not complete owing to peculiar circumstances, a high school certificate or a college degree to enter the world of work or pursue further education and training, to go in for a certificate or degree if they are to change, advance or even to stay in the profession and occupation where they are. If one wants to work in a new field, requires to adjust to new environment for vertical mobility on the job or needs to keep abreast of new developments, a variety of continuing education programmes are being offered by a number of agencies. The number of agencies offering continuing education programmes as well as number of participants in them are steadily increasing. Continuing education is thus a growth segment in the field of education aimed at fulfilling the learning needs of aspiring adults that has brought hope to millions of people. ☐

Gender Gap in Literacy

According to figures available with the U.N., at least 960 million adults worldwide cannot read or write. Add the estimated 10-20 per cent of adults in the industrialized countries who are functionally illiterate—people who once were literate—and the world figure for illiteracy exceeds one billion adults. The majority of them, perhaps more than two-thirds, are women.

Globally, one woman in three is illiterate, as compared to one man in five. But in some countries, as many as eight women in 10 are illiterate.

The gender gap in literacy rates is set to widen further, analysts say, as rising poverty and ailing economies increase the demand for women's unskilled labour, pushing literacy lower down in the list of priorities of people and governments.

There is far more at stake in women's literacy than the ability to read and write. Preliminary findings from a questionnaire sent out in September 1988 by World YWCA (Young Women's Christian Association) to its member associations show that women who receive literacy training get more respect at home and in the community. In turn, women are able to exercise more control over their own lives. And they are more able to receive and understand information on health, family planning, and other issues.

Women who can read and write can earn more because they are better equipped to search for jobs, including those traditionally reserved for men. They are more able to run small businesses and keep records on their own. Heightened political awareness, participation and organizational skills, give them a better understanding of their rights and make them more effective leaders of women's groups. Finally, mothers' level of education affects their children's health and progress in school.

In developing countries, women's participation in literacy classes is greater in rural areas. One reason for this is that they see literacy as a way of helping them to cope with responsibilities left behind by their menfolk who have migrated to the towns in search of work. Literacy also means being able to read their husbands' letters and write back without having to call in other people.

But few women manage to fulfil their desire to become literate. They are usually overwhelmed by time-consuming chores and duties, men's resistance, and shortcomings in the design of literacy programmes. Unless carefully managed, projects which integrate literacy into health care or incomegeneration programmes, for example, can impede literacy instruction by expecting women to get involved in numerous other activities.

National Conference on Indian Environment

The Centre for Study of Environmental Science proposes to organise a conference on 'Protect Indian Environment' on 22-24 Feb., 1991 at Allahabad under the auspices of the Department of Geography, Allahabad Degree College, and in collaboration with the G.B. Pant Social Science Institute, Institute of Engineering and Rural Technology, Allahabad. The objective of the conference is to create consciousness in the people and students, to develop plans and models for sustainable future and reasoned awareness, to advance responsible and serious investigation of today and tomorrow, improvement of methodologies and increase public understanding.

The topics proposed to be discussed at the conference include: (a) Environmental Pollution such as air, Ozone layer depletion, acid rain, noise, water, land, Himalayan ecology, major dams; (b) Social Environment such as the environment of a house, slums, crimanality, drug addiction, corruption, communal tensions; (c) Urban and Rural Environmental Conservation such as preservation of cultural bonanza, environmental forestry, wasteland reclamation, desertification, tribal environment; (d) Educational Environment such as decline in standard of teaching, students unrest, suggestions for improvements; (e) Ecology of Transportation of Communication: and (f) Population Pollution or Popollution.

Over 200 experts from various disciplines of technology, planning, futurology, academicians and environmentalists are expected to participate to discuss the long term development programme and environmental conservation for future.

National Convention on Cooperation

The Indian Society for Studies in Cooperation, Pune, in collaboration with the Institute of Rural Management, Anand, will organise the Eleventh National Convention on Studies in Cooperation on 28-30 November, 1990. Dr. V. Kurein, Chairman, National Dairy Development Board will inaugurate the convention while Dr. Neelkanth Rath, Ex-Director, Gokhale Institute of Politics and Economics, Pune will be the Chief Guest and deliver the keynote address at the inaugural session of the convention.

The topics proposed to be discussed at the Convention include:

(1) Contribution of Cooperatives to capital formation—their potential and actual performance; (2) Sickness in Cooperatives—causes and cures; and (3) Self help groups—nonformal cooperatives—their potential and perceived role.

Workshop on Small Business Centres

A three-day U.G.C. sponsored workshop on Small Business Centres (SBC's) was organised by the Department of Business Economics, University of Delhi at South Campus on 5-7 November, 1990. Mr. R. Ansari, Member, Planning Commission, inaugurated the workshop. Prof. Allan Gibb of Durham University, U.K., who delivered the keynote address, stressed the need and importance in a developing economy like India to expand employment opportunities.

The workshop was attended by representatives of ASSOCHAM, NIESBUD, EDII, DSIDC, CED from Bhopal and Lucknow, Department of Science & Technology, PHD Chamber of Commerce and Industry, U.S.A.I.D., A.I.U. and experts on entrepreneurship from different Universities. Besides discussions, the workshop also witnessed the presentation of a project proposal for a small-scale detergent manufacturing unit by five students of the Department of Business Economics and the display of a video film on the STEP programme of the Department of Science & Technology, Government of India.

After intense discussion and deliberation, guidelines were framed for Small Business Centres in Universities.

News from UGC

Countrywide Classroom Programme

Between 23rd November to 30th November, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
1.00 p.m. to 2.00 p.m.

23.11.90

"Algebraic Structure – 3: Graphs"

"Diversity in Unity: A Lecture by Prof. Yash Pal – II"

"The Sight of Sounds"

24.11.90

"Consumer Protection – III: Right to Information"

"Kuchamani Khyal – The Endangered Folk Theatre Style – II"

"Body Building – I"

25.11.90

No Telecast

26.11.90

"Classical Mechanics – 9: Symmetries"

"Accountancy – Introduction and Concepts"

"Time of Discoveries"

27.11.90

"There is a Craft – I"

"The Fight Against Illiteracy"

"Rasashastra – II"

28.11.90

"Application of Close Range"

"In Search of a Human Habitate"

29.11.90

"Computer Wizards"

"Tragedy – Aristotle to Brecht - III"

30.11.90

"Algebraic Structure – 4: Boolean Algebra"

"The Pursuit"

2nd Transmission
4.00 p.m. to 5.00 p.m.

23.11.90

"Fundamentals of Mechanics – II"

"Rapid Rural Appraisal – Learning from the Villagers – I"

"Noise Pollution"

24.11.90

"Rasa Ranjita: Understanding Indian Dance – 3: Kuchipudi"

"Museums and Museology"

"Wiring Household Plugs"

25.11.90

No Telecast

26.11.90

"Classical Mechanics – 3: Newton's First Law"

"Raising Morale"

"The Oceans"

27.11.90

"Organic Techniques – I"

"Media in Formal and Non-Formal Education"

"Laser"

28.11.90

"An Edifice that Meditates: The Architecture of Bahai Temple"

"A Case History of a Volcano"

29.11.90

"COBOL – 3: Elements of COBOL"

"Teaching and Learning English"

"In Search of Ethnic Dimension – II: The Koyas"

30.11.90

"Algebraic Structure – 4: Boolean Algebra"

"The Pursuit"

Rs. 50 Crore for Countrywide Classroom Programme

The University Grants Commission (UGC) has prepared a proposal of Rs. 50 crore for its educational television programme, the Countrywide Classroom (CWCR), and other programmes relating to mass communication for the eighth Five-Year Plan period (1990-95). There is a proposal to set up six more educational media centres, in addition to the existing 14 centres in the university system possibly in the States of Himachal Pradesh, Uttar Pradesh, Bihar, Orissa, Karnataka and Kerala where no such centres exist at present. The Commission is likely to get additional one hour time slot on Doordarshan for the CWCR programme.

For networking of the various media centres, the Commission is considering to set up a Consortium for existing educational media centres within the university sector for undertaking joint ventures and carrying out research in the area of educational mass media etc.

Starting with four media centres known as Educational Media Research Centres (EMRCs) and two Audio-Visual Research Centres (AVRCs) in 1983, the Countrywide Classroom project has now 14 such centres in as many universities in the country that have so far been able to produce about 2000 programmes, targeted for televiewing primarily for educational enrichment. During 7th plan, the UGC supplied 2000 TV sets to different colleges in the country for the purpose of viewing these programmes.

News from Abroad

Building East-West Partnerships

On August 11, 1990, following the quinquennial conference of the International Association of Universities (IAU) in Helsinki, Finland, the American Council on Education (ACE) sponsored a meeting between participants from the United States, Canada, and Central and Eastern Europe, including the Soviet Union. Attending the half-day session were approximately 35 U.S. university presidents and other officials, and more than 50 European rectors.

The meeting, chaired by ACE President Robert H. Atwell, was designed to allow participants to exchange information on their respective systems, gauge the impact of recent political and educational changes, and explore opportunities for new forms of multilateral cooperation. Following a panel presentation by representatives of several international higher education organizations, participants divided into four smaller groups for discussion.

In his opening remarks Mr. Robert Atwell said, "We are engaged in an uncharted effort to rethink the direction of our individual nations and to construct a system that meets the challenges of the global interdependence in which we find ourselves at the close of the 20th century." Because much of the dialogue in higher education between the U.S. and Eastern and Central Europe is on a one-to-one basis between individual institutions and faculty members, Atwell told the group, higher education leaders have not often explored how cooperation can go beyond the successful institutional agreement already in place and take a multilateral approach to meeting the needs of different systems.

The meeting would provide such an opportunity, he said, as well as offer a chance to explore the question of whether and how the higher education dialogue among the U.S. and the nations and institutions of Central and Eastern Europe could be sustained. He promised that ACE would share its findings with member institutions, through publications and meetings, to help them in their efforts to build cooperative relationships.

Atwell reviewed several basic aspects of American higher education that frequently are confusing to international visitors and observers: the degree of decentralization, the lack of anything truly comparable to a "Ministry of Education" in other countries, and the array of 3,400 institutions of post-secondary education, in all their diversity of size and mission. While ACE can provide a forum for dialogue with higher education in other nations and disseminate information to U.S. colleges and universities, he said, its role as coordinator of activities is limited primarily to information and facilitation of contacts. He noted that ACE has proposed to the U.S. government the formation of a clearinghouse that would receive requests for cooperation from institutions in the

U.S. and Central and Eastern Europe, and develop a process for disseminating those requests to help institutions find appropriate partners.

As far as the U.S. government is concerned, Atwell emphasized, no single agency coordinates policy or disburses funds for cooperative educational activities; rather, a number of agencies are involved with a wide variety of programs. Not a great deal of federal money has been allocated so far to assist higher education in Eastern and Central Europe. The government is counting on significant support and initiatives from the private sector.

One way to achieve increased cooperation, Atwell concluded, is for the U.S. to participate in TEMPUS (Trans-European Mobility Scheme for University Studies), the European Community (EC) program to encourage and fund cooperation in academic and training programs between Western and Eastern/Central European nations and institutions. TEMPUS will be open to participation by the U.S. and other institutions outside the EC.

Ed Prosser, Director of COMETT (EC Action Program for Education and Training for Technology), described TEMPUS, which is built around other EC programs such as ERASMUS (EC Action Scheme for the Mobility of University Students), COMETT, and LINGUA, (the EC Action program to promote foreign language competence). Approved in May 1990 and funded initially at 150 million ECU (European Currency Units, roughly the equivalent of U.S. dollars) a year, TEMPUS will begin with Poland and Hungary, which were allocated 20 million ECU. In July, the Commission approved the inclusion of Czechoslovakia, Bulgaria, Yugoslavia, and the German Democratic Republic (as long as it remained a separate state).

Financial assistance, Prosser said, will be offered for (1) joint European projects, involving one Central/Eastern European country and two EC countries, to develop curricula, create new departments, and engage in other efforts, with applications due by the end of September; (2) student and staff mobility in both directions; and (3) exchanges of publications, assistance for meetings of higher education organization in Western Europe, and other activities.

Priorities, he said, include management and business; applied economics; applied science, technology, and engineering; modern European languages; agriculture; environmental protection; and social and economic sciences.

Prosser noted that the Brussels office is staffed to launch the program and assist applicants. A TEMPUS office will be established in each of the eligible Eastern and Central European countries. Procedures for including other countries remain to be determined.

Ladislav Cerych, the director of the European Institute of Education and Social Policy, discussed the possibilities for cooperation between TEMPUS and non-EC countries, especially the U.S. The TEMPUS office can coordinate national initiatives, and will support the European side of projects, he said. Either the national government or individual institutions would have to finance U.S. involvement. Cerych encouraged any ACE or U.S. government initiative as a pilot project for the involvement of non-EC countries.

Others speaking on the opening panel included Franz Eberhard, secretary general of the IAU; Andris Barblan, secretary general of the Conference of European Rectors (CRE); and George Pedersen, president of the University of Western Ontario, representing the Association of Universities and Colleges of Canada (AUCC).

The small group sessions focused on three basic questions: What does each side need to know about the other to enhance cooperation? What needs are not being met by institution-to-institution agreement? What steps should be taken to continue the dialogue begun in Helinski?

Reports from the group discussions emphasized several points:

■ **Information exchange is crucial.** People in different countries do not have adequate information about systems, institutions, and people in other countries to determine who their appropriate partners might be and what kinds of cooperative agreements work well. Suggestions ranged from the exchange of telephone books among institutions so that people could know how to reach particular faculty members and administrators; to the exchange of information on educational systems; to a clearinghouse with easily accessible data banks containing information on faculty, departments, curriculum and requirements, and new educational laws.

TEMPUS will have records of successful interinstitutional agreements. The IAU, CRE, and European Centre for Higher Education (CEPES), which is part of UNESCO, cooperated on a pilot project with Romania to identify the strengths and needs of Eastern and Central European universities and to locate universities in Western Europe with the capacity and willingness to offer assistance or enter into cooperative agreements.

It was agreed that the major actors must find ways to link these various networks and sources of information.

- **Funding.** As one rapporteur stated, "In the end, what matters is money." In addition to national governments, universities should look for other source of funding, and find ways to package various sources to build their programs. One potential and largely untapped source of funds is communities of people in the U.S. and Canada whose heritage is in Central and Eastern Europe and who will have strong ties to the region.

- **Networks and Exchanges.** Personal networks among faculty members (primarily) and administrators (secondarily) are crucial to cooperative efforts. Participants agreed that all forms of faculty and student exchange are important. For the next two or three years, faculty exchange is crucial because of the need to overcome the isolation that faculty from Eastern and Central European countries have suffered and because of the need to rebuild programs and curricula. Many institutions are seeking joint research projects, consultants from abroad, and training for young faculty members. Funding is needed to help faculty members participate in disciplinary conferences and short-term visits. European rectors indicated greater interest in identifying opportunities for graduate students to study in the U.S. and Canada, rather than undergraduates; for U.S. participants, the reverse was true.

- **English Language Training.** All groups listed English language instruction for faculty members and students as a primary need. Without facility in English, said one rapporteur, students and faculty will continue to be left out of the principal chain of intellectual communication in the world today. If Central and Eastern European universities let it be known widely and emphatically that they need such training, it is possible that government or foundation support might be forthcoming.

- **Information Technology.** Most Eastern and Central European universities need equipment and advice to take advantage of advances in information technology. They may need personal computers and software (especially database software) more than mainframes. They need to be able to use video cassettes of experiments and lectures of the kind generated in the U.S. in the last 10 to 15 years. They want and need access to BITNET, EARN, and other computer networks for the exchange of information.

- **Consultation.** Many institutions believe they need "everything" and would like to know what U.S. institutions might have to offer; that is too large an issue for those on the other side to deal with. It was suggested that consultants could help institutions set priorities. Many needs are specific to the local situation, and decisions about partnerships require on-site consultation.

- **University Management.** Several participants noted the need for courses on university management, especially for rectors and others in Central and Eastern Europe new to university autonomy and new methods of management. The collapse of centralized authority in several nations has given many administrators responsibilities they are not prepared to handle. CRE's management courses were recommended, and the creation of additional courses was encouraged by the participants.

- **Coordination.** Groups and individuals suggested several possible mechanisms for ongoing discussions of cooperation. One group suggested the formation of bilateral or multilateral committees that would facilitate cooperation between national groups and their counterparts in the U.S. Such committees should include faculty members, students, and administrators who would exchange information and visit each country, spending time in each of the higher education institutions. Others suggested linking the endeavours of the IAU, CRE, TEMPUS, ACE, and other national rectors' conferences. One participant suggested that a process was needed to identify and form a group of those universities on both sides committed to cooperative activities, and to find funding for exploratory visits to facilities and the development of projects.

We Congratulate . . .

1. **Dr. Kirti Singh, Vice-Chancellor, Himachal Pradesh Krishi Vishvavidyalaya, who has been nominated as member of the International Society for Horticulture Science.**

2. **Dr. S.N. Prasad of Janta College of Education, Chandrapur (Maharashtra) who has been elected President of the International Association of Educators for World Peace (IAEWP), a Non-Governmental Organisation of the United Nations, UNICEF and UNESCO. Dr. Prasad will also be the Editor-in-Chief of the Association's Journal, "Peace Progress".**

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to the AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A list of Research Scholars registered for Doctoral Degrees in Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Ansari, Mahamood Ahmed. *Relativity alternative theories of gravity*. BHU. Dr. Rehman Qurashi, Department of Mathematics, Banaras Hindu University, Varanasi.

2. Choubey, Alka. *Some problems in categorical topology*. BHU. Dr. A.K. Srivastava, Department of Mathematics, Banaras Hindu University, Varanasi.

3. Dubey, Om Prakash. *Nonlinear programming and its application*. BHU. Prof. S.N. Lal, Department of Mathematics, Banaras Hindu University, Varanasi.

4. Dubey, Vinaya Kumar. *Mathematical programming aspects of analysis*. BHU. Prof. S.N. Lal, Department of Mathematics, Banaras Hindu University, Varanasi.

5. Mishra, Prabhakar. *Limit theorem in probability*. BHU. Prof. V.V. Menon, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

6. Satyanarayana, Bavanari. *Special functions of computer analysis*. BHU. Dr. (Miss) M. Lahari, Department of Mathematics, Banaras Hindu University, Varanasi.

7. Singh, Anjani Kumar. *On differentiable structures*. BHU. Dr. S.D. Singh, Department of Mathematics, Banaras Hindu University, Varanasi.

8. Singh, Anuranwaj. *Category theoretic aspects topology/fuzzy topology*. BHU. Dr. A.K. Shrivastava, Department of Mathematics, Banaras Hindu University, Varanasi.

9. Singh, Jai Prakash. *Differential geometry of almost complex and almost contact—manifold*. BHU. Dr. R.H. Ojha, Department of Mathematics, Banaras Hindu University, Varanasi.

10. Singh, Rajendra Bahadur. *Structures on a differentiable manifold*. BHU. Dr. S.D. Singh, Department of Mathematics, Banaras Hindu University, Varanasi.

11. Srivastava, Brijesh Kumar. *Computational fluid mechanics*. BHU. Prof. R.R. Sharma, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

12. Upadhyaya, Shankerendu. *Integral transforms*. BHU. Prof. R.N. Pandey, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

13. Upadhyaya, Dinesh Kumar. *Distribution theory and applications*. BHU. Prof. R.S. Pathak, Department of Mathematics, Banaras Hindu University, Varanasi.

Statistics

1. Arun Prakash. *Estimation problems in sample surveys in the*

presence of non-response errors. BHU. Dr. V.K. Singh, Department of Statistics, Banaras Hindu University, Varanasi.

2. Gaya Prasad. *Migration and its consequential effects on place of origin.* BHU. Prof. R.C. Yadav, Department of Statistics, Banaras Hindu University, Varanasi.

3. Jay Prakash. *Some statistical problems using prior information.* BHU. Dr. B.N. Pandey, Department of Statistics, Banaras Hindu University, Varanasi.

4. Shastri, Vastoshpati. *Some inferential procedures for life time data.* BHU. Dr. S.K. Upadhyay, Department of Statistics, Banaras Hindu University, Varanasi.

5. Singh, Shri Prakash. *Some models relating to migration and development.* BHU. Dr. K.N. Pandey, Department of Statistics, Banaras Hindu University, Varanasi.

6. Tripathi, Suresh. *Methods of estimation in econometric models.* BHU. Dr. K.N. Pandey, Department of Statistics, Banaras Hindu University, Varanasi.

Physics

1. Bhardwaj, Sanjay. *Studies on bio-molecules.* BHU. Dr. P.C. Mishra, Department of Physics, Banaras Hindu University, Varanasi.

2. Chandra, Deepak. *Gauge theories and study of high density matter.* Delhi. Dr. P.K. Srivastava, Prof., Department of Physics, University of Delhi, Delhi and Dr. Ashok Kumar Goyal, Hansraj College, Delhi.

3. Chatterjee, Sandip. *Study of luminescence phenomenon in rare earth oxysulphide and other materials.* Delhi. Dr. M.M. Bajaj, Reader, Department of Physics, University of Delhi, Delhi and Dr. P.K. Gosh, National Physical Laboratory, New Delhi.

4. Chaturvedi, Bireshwar. *Some studies with Van-de-Graaff accelerator and its associated electronics.* BHU. Prof. A.K. Nigam, Department of Physics, Banaras Hindu University, Varanasi.

5. Chaudhury, Koel. *Spectroscopic studies on HIV affected systems and comparison with other complex disorders.* Delhi. Dr. Madan Mohan Bajaj, Reader, Department of Physics, University of Delhi, Delhi.

6. De, Kakoli. *Particle gamma correlation studies in reactions.* BHU. Prof. J. Rama Rao, Department of Physics, Banaras Hindu University, Varanasi.

7. Dwivedi, Rajiva. *Generation of plasma waves in space plasma.* BHU. Dr. C.P. Singh. Department of Physics, Banaras Hindu University, Varanasi.

8. Ghildyal, Vineet. *Non-linear waves and stability.* Delhi. Dr. G.L. Kalra, Reader, Department of Physics, University of Delhi, Delhi.

9. Goel, Shishir Kumar. *Shape function of the Bremmstrahlung radiation from electron atom collisions.* BHU. Dr. R. Shankar, Department of Physics, Banaras Hindu University, Varanasi.

10. Gupta, Gautam. *Micropulsation studies in magnetoplasma.* BHU. Prof. K.D. Mishra, Department of Applied Physics, Banaras Hindu University, Varanasi.

11. Jayaswal, Sudesh Kumar. *Spectral studies of chemical and biological molecules in stratosphere using laser heterodyne technique.* Delhi. Dr. M.M. Bajaj, Reader, Department of Physics, University of Delhi, Delhi and Dr. S.L. Jain.

12. Joshi, Pooran Chandra. *Thin films of electronic materials.* Delhi. Prof. Abhai Mansingh, Department of Physics, University of Delhi, Delhi.

13. Mahapatra, Dinakrushna. *Electromagnetic communication and E.M. wave propagation in confined and semiconfined regions.* BHU. Prof. O.N. Singh, Department of Applied Physics, Banaras Hindu University, Varanasi and Mr. P. Khastgir, Department of Applied Physics, Banaras Hindu University, Varanasi.

14. Mohanty, Smruti Ranjan. *Laser plasma interaction.* Delhi. Prof. M.P. Srivastava, Reader, Department of Physics, University of Delhi, Delhi and Prof. Feroz Ahmad, Department of Physics, University of Delhi, Delhi.

15. Pandey, Kamlesh. *Solid state ionic materials for gas sensors and fuel cells.* BHU. Prof. S. Chandra, Department of Physics, Banaras Hindu University, Varanasi and Dr. R.P. Singh, Department of Physics, Banaras Hindu University, Varanasi.

16. Pandey, Padmnabh. *Study of multistep compound reactions induced by neutrons and charged particles.* BHU. Prof. J. Rama Rao, Department of Physics, Banaras Hindu University, Varanasi.

17. Pandey, Rakesh Kumar. *Study of micromolecules using laser light scattering.* BHU. Dr. R.N. Tripathi, Department of Physics, Banaras Hindu University, Varanasi and Prof. K.N. Upadhyay, Department of Physics, Banaras Hindu University, Varanasi.

18. Pandey, Shailendra. *Excitation and propagation of waves in magnetoplasma.* BHU. Prof. K.D. Mishra, Department of Applied Physics, Banaras Hindu University, Varanasi and Dr. B.B. Srivastava, Department of Applied Physics, Banaras Hindu University, Varanasi.

19. Ray, Pratima. *Molecular characterization of malaria antigens.* Delhi. Dr. M.V.R. Rao and Dr. Y.D. Sharma, All India Institute of Medical Sciences, New Delhi.

20. Sharma, Anupam. *Preparation and study of high temperature superconductors.* Delhi. Dr. G.K. Chadha, Reader, Department of Physics, University of Delhi, Delhi.

21. Sharma, Hindanghayum Basantakumar. *Material sulphur-thin films.* Delhi. Dr. Raj Rup, Reader, Department of Physics, University of Delhi, Delhi.

22. Sharma, Ramesh Chand. *Garhswal spectroscopy with lasers.* BHU. Dr. P.N. Gupta, Department of Physics, Banaras Hindu University, Varanasi and Dr. R.P. Singh, Department of Physics, Banaras Hindu University, Varanasi.

23. Shekhar, Sudhanshu. *Study of electromagnetic fields in optical fibres and thin films.* BHU. Dr. S.P. Ojha, Department of Applied Physics, Banaras Hindu University, Varanasi.

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1. Arvind Kumar. *Water contamination in open cast mines and its control.* BHU. Dr. S. Ratan, Department of Mining Engineering, Banaras Hindu University, Varanasi.

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Department of Biotechnology, Banaras Hindu University, Varanasi.

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Anthropology

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1. Cherian, Sheila S. *Studies on the respiratory organ and respiratory physiology in certain oligochaetes*. Kerala. Dr. G. Saraswathy Ammal, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

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2. Gupta, Ajay Kumar. *Studies on enterotoxicity of Vibrio fluvialis*. BHU. Dr. R.S. Dubey, Department of Biochemistry, Banaras Hindu University, Varanasi.

3. Pushalkar, Smriti Moreshwar. *Enzyme immobilization and modification*. BHU. Dr. (Mrs.) V. Taneja, Department of Biochemistry, Banaras Hindu University, Varanasi.

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1. Awasthi, Mamta. *Response of acid tolerant algae to metal stress*. BHU. Dr. L.C. Rai, Department of Botany, Banaras Hindu University, Varanasi.

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1. Bhagwati Swarup. *Avian reproductive physiology*. BHU. Prof. P.D. Tewari, Department of Zoology, Banaras Hindu University, Varanasi.

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6. Pandey, Sarita. *Mammalian reproduction.* BHU. Prof. C.J. Dominic, Department of Zoology, Banaras Hindu University, Varanasi and Dr. A. Krishna, Department of Zoology, Banaras Hindu University, Varanasi.

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Medical Sciences

1. Abhimanyu Kumar. *Management of hyperkinetics syndrome by an indigenous drug.* BHU. Prof. G.P. Dubey, Department of Basic Principles, Banaras Hindu University, Varanasi and Dr. R.D. Sharma, Department of Basic Principles, Banaras Hindu University, Varanasi.

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9. Keshari, Meena. *Ayurveda ke paripekshya mein Sanskrit kavyon mein varnit ritu varnana ka samikshatmak adhyayan.* BHU. Prof. Jyotir Mitra, Department of Basic Principles, Banaras Hindu University, Varanasi and Dr. R.P. Dwivedi, Department of Sanskrit, Banaras Hindu University, Varanasi.

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15. Pandey, Vinita. *Study of home remedies in urban area.* BHU. Prof. Jyotir Mitra, Department of Basic Principles, Banaras Hindu University, Varanasi and Dr. (Mrs.) N. Sant, Department of Home Sciences, Banaras Hindu University, Varanasi.

16. Pathak, Bhawana. *Etiopathogenesis and treatment of Amavata, rheumatoid arthritis.* BHU. Dr. K.P. Shukla, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

17. Pati Ram Singh. *Pramukh kalpsutra mein dravya guna visayak samagriyo ka samikshatmak adhyayan.* BHU. Dr. S.D. Dubey, Department of Dravya Guna, Banaras Hindu University, Varanasi.

18. Pushpalatha, H. *Studies on some important medicinal plants.* BHU. Dr. S.D. Dube, Department of Dravya Guna, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

19. Roy, Roopa. *Medicinal chemistry/chemistry of plant products.* BHU. Prof. A.B. Roy, Department of Medicinal Chemistry, Banaras Hindu University, Varanasi.

20. Sarma, D. Nanda Kumar. *Phytochemical, micromorphological and experimental studies on medicinal plants.* BHU. Dr. R.L. Khosa, Department of Pharmaceutics, Banaras Hindu University, Varanasi.

21. Shukla, Rajendra Kumar. *Mahabharat evam charaka samhita mein varnit swasthavritta evam sadvritta ka tulnatmak adhyayan.* BHU. Dr. K.P. Shukla, Department of Kayachikitsa, Banaras Hindu University, Varanasi and Dr. R.P. Dwivedi, Department of Sanskrit, Banaras Hindu University, Varanasi.

22. Singh, Anita. *Reversibility of malnutritions induced dopemine dependent behavioural deficits by intracranial grafting of dopamine cells.* BHU. Dr. R.D. Badgaiyan, Department of Physiology, Banaras Hindu University, Varanasi.

23. Singh, Bharti. *Phytochemical investigation of some Indian medicinal plants.* BHU. Dr. V.B. Pandey, Department of Medicinal Chemistry, Banaras Hindu University, Varanasi.

24. Singh, Manju. *Economical study of some Indian medicinal plants.* BHU. Dr. V.K. Joshi, Department of Dravya Guna, Banaras Hindu University, Varanasi.

25. Singh, Manorama. *Steroids of solanaceous plants.* BHU. Dr. M. Sahai, Department of Medicinal Chemistry, Banaras Hindu University, Varanasi.

26. Singh, Meera. *Evaluation of leprosy.* BHU. Prof. P. Kaur, Department of Preventive and Social Medicine, Banaras Hindu University, Varanasi.

27. Singh, Nirmala. *A study of social profile and illness behaviour of tuberculosis patient.* BHU. Dr. H.C. Saxena, Department of Preventive and Social Medicine, Banaras Hindu University, Varanasi.

28. Singh, Sanjay. *Investigation of dietary and chemotherapeutic control of experimental cutaneous aging with special reference to modulation of oxidant stress.* BHU. Dr. B.L. Pandey, Department of Pharmacology, Banaras Hindu University, Varanasi.

29. Singh, Shailesh. *Epidermal growth factor receptor status in breast cancer.* BHU. Prof. N.N. Khanna, Department of Surgery, Banaras Hindu University, Varanasi.

30. Singh, Veerendra Kumar. *Role of exercises in joint diseases.* BHU. Dr. A.K. De, Department of Physiology, Banaras Hindu University, Varanasi.

31. Srivastava, Nisha. *Evaluation of intensive education services in leprosy eradication programme in Varanasi district.* BHU. Prof. P. Kaur, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

32. Taingoria, C.S.S. *A clinical study of Kitibha (psoriasis) with indigenous drug meetha kutaj Wrigntia tinctoria.* BHU. Prof. D. Ojha, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

33. Tripathi, Kailash Pati. *Drug targeting using magnetic microsphere.* BHU. Dr. Jagdish Singh, Department of Pharmaceutics, Banaras Hindu University, Varanasi.

34. Upadhyay, Alaka. *Vedanta evam ayurveda.* BHU. Prof. S.N. Tripathi, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

35. Verma, Anupama. *Impact evaluation of ICDS programme in ACD block in Varanasi District.* BHU. Dr. N.S.N. Rao, Department of Preventive and Social Medicine, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Bhattacharyya, Somnath. *Numerical studies of compressible rotating laminar boundary layer flows.* IISc, Bangalore.

2. Bhowal, Swapna. *Studies on the effects of non-homogeneity on the stresses in some problems of elasticity.* Calcutta.

3. Guha, Manojkumar. *Stretching of material lines and surfaces in anisotopic state of turbulence and effects of intermittency averaging on them.* Calcutta.

4. Majumdar, Debabrata. *On some effects of nonlinear wave interactions in a plasma.* Calcutta.

5. Parhi, S. *Stability of incompressible stratified fluid flows.* IISc, Bangalore.

6. Sahai, Vivek. *On models of irreducible representations of certain Lie algebras and special functions.* IIT Delhi. Prof. H.L. Manocha, Department of Mathematics, Indian Institute of Technology, New Delhi.

7. Satyanarayana Raju, G.V. *Some problems in fluid flows and heat transfer in porous and non-porous ducts.* Kakatiya. Prof. N.Ch. Pattabhi Ramacharyulu, Department of Mathematics, Regional Engineering College, Warangal.

8. Thatte, B.D. *On the reconstruction problems in graph theory.* IISc, Bangalore.

9. Yadaiah, D. *Some problems in generalised theory of thermoelasticity.* Kakatiya. Dr. R.K. Shukla, Department of Mathematics, Kakatiya University, Warangal.

Physics

1. Babbar, Vijay Kumar. *Electrical, magnetic, microstructural properties and Mossbauer studies of hot pressed Mn-Zn-Ni and Mn-Zn-Co ferrites.* IIT, Delhi. Prof. R.K. Puri, Department of Physics, Indian Institute of Technology, New Delhi and Prof. R.G. Mendiratta, Department of Physics, Indian Institute of Technology, New Delhi.

2. Bandyopadhyay, Debades. *Momentum and density dependent two-body effective interaction: Applications to nucleus-nucleus interaction and nuclear equation of state.* Calcutta.

3. Manohar, P. *Studies in photoproduction of charged pions from complex nuclei using distorted wave impulse approximation.* Anna.

4. Mohan, N. *Some investigations in active 'R' filters.* Karnatak. Dr. R.L. Patil, Reader, Department of Studies in Physics, Karnatak University, Dharwad.

5. Naidu, Pappala Appala. *Studies on microwave induced plasmas loaded within helical slow wave structures.* IIT Delhi. Prof. D.P.

Tewari, Department of Physics, Indian Institute of Technology, New Delhi. Dr. G. Umesh, Department of Physics, Indian Institute of Technology, New Delhi and Dr. A. Ganguli, Department of Physics, Indian Institute of Technology, New Delhi.

6. Rama Murty, M. Bhaskara. *Application of microwave techniques for the study of dielectric properties of some substances.* Karnatak. Dr. R.L. Patil, Reader, Department of Physics, Karnatak University, Dharwad.

7. Satheesh Kumar, A. *Investigations on current transition in MHD generators.* IIT, Delhi. Prof. M.S. Sodha, Vice-Chancellor, Devi Ahilya Vishwavidyalaya, Indore; Prof. D.P. Tewari, Department of Physics, Indian Institute of Technology, New Delhi and Dr. B.K. Gupta, Industrial Tribology, Machine Dynamics and Maintenance Engineering Centre, Indian Institute of Technology, New Delhi.

8. Sinha, Ravindra Kumar. *A study of the propagation characteristics of rectangular core optical waveguides and devices.* IIT, Delhi. Dr. Arun Kumar, Department of Physics, Indian Institute of Technology, New Delhi and Dr. B.P. Pal, Department of Physics, Indian Institute of Technology, New Delhi.

9. Srinivas, M. *Dielectric studies on some solids: Studies on some divalent nitrates and their mixed crystals.* Kakatiya. Prof. (Mrs.) Lalitha Sirdeshmuch, Department of Physics, Kakatiya University, Warangal.

10. Srivastava, Pramod Kumar. *Studies on the electroluminescence of ZnS: Cu, Sm, Cl and ZnS: Cu, Dy, Cl phosphors.* Ghasidas. Dr. B.P. Chandra, Prof., Department of Physics, Rani Durgawati Vishwavidyalaya, Jabalpur.

11. Subrahmanyam, Y. *Spectroscopic properties of certain trivalent lanthanide doped ternary sulphate glasses.* Venkateswara. Prof. S.V.J. Lakshman, Department of Physics and Vice-Chancellor, Sri Venkateswara University, Tirupati.

12. Venkataramana Bhat, Balekala. *Study of single quantum annihilation of positrons.* Calicut. Dr. J.C. Palathingal, Department of Physics, University of Calicut, Calicut and Dr. K.M. Varier, Department of Physics, University of Calicut, Calicut.

13. Viswamitra, M.A. *Contributions to single crystal X-ray structural studies. D.Sc.* IISc, Bangalore.

Chemistry

1. Bains, Rajwant. *Synthesis and characterization of transition metal substituted hypervalent compounds.* Panjab.

2. Balaji Rao, S.B. *Thiocyanate and perchlorate complexes of cobalt, nickel, copper and zinc with some benzimidazole derivatives.* Bangalore. Dr. N.M. Nanjegowda, Department of Chemistry, Central College, Bangalore.

3. Banerjee, Shashank. *Kinetics of dehydrogenation reactions in fixed bed.* Nagpur. Dr. K.K. Sonune, Department of Chemistry, Lakshminarayan Institute of Technology, Nagpur.

4. Bansod, Vijay Purushottam. *Studies on polymers alloys.* Nagpur. Dr. Moolchanda Gupta, Reader, Department of Chemistry, Nagpur University, Nagpur.

5. Bharathi, Patibandla. *Preparation, characterisation and evaluation of new montmorillonite anchored catalysts for selective hydrogenations.* Osmania.

6. Deshmukh, Vibha Santanu. *Studies on the separation of Cu from other metal ions using an anion exchanger containing a chelating ligand.* Nagpur. Dr. G.S. Natrajan, Reader, Laxminarayan Institute of Technology, Nagpur.

7. Dilipkumar Somabhai Raj. *Studies on metal chelates of some quadridentate schiff bases.* Patel. Dr. J.R. Shah, Prof., Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

8. Goda Krishna. *Studies on esterases from uzifly, Exoristine sorbillans.* Bangalore. Dr. P.S. Veerabhadrappa, Department of Chemistry, Bangalore University, Bangalore.

9. Jeyalakshmi, R. *Catalytic activity of rare earth-transition metal oxides with K_2NiF_4 structure.* Anna.

10. Khan, Farhin. *Solvent extraction studies of some metal chelates.* Nagpur. Dr. R.B. Kharat, Department of Chemistry, Institute of Science, Nagpur.

11. Majumdar, Gopal Harshadlal. *Condensation polymers based on ketones and aldehydes.* Patel. Dr. H.S. Patel, Reader, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

12. Mazumdar, Sujit Nandy. *Cycloaddition reactions of 1, 3 diaza-1, 3-butadienes.* NEHU. Dr. M.P. Mahajan, Department of Chemistry, North Eastern Hill University, Shillong.

13. Mirajkar, Abdurrazzaque Mohammed Usman. *Studies on unusual fatty acids and synthesis of some oleochemicals.* Karnatak. Dr. C.D. Daulatabad, Reader, Department of Studies in Chemistry, Karnatak University, Dharwad.

14. Nagi Reddy, K. *Kinetics of oxidation of organic compounds.* Osmania.

15. Panja, Prabhatkumar. *Molecular interaction from infrared studies in condensed phase.* Calcutta.

16. Sharma, Vinod Kumar. *Studies on the synthesis and pyrolysis of glycidic esters.* IIT Delhi. Dr. Raj K. Bansal, Department of Chemistry, Indian Institute of Technology, New Delhi.

17. Shashidhar, G.V.S. *Radiation induced copolymerisation of acrylonitrile with acrylates and methacrylates: Synthesis and characterisation.* Kakatiya. Prof. E.V. Sundaram, Department of Chemistry, Kakatiya University, Warangal.

18. Sreenivasa Kumar, N.R. *Synthesis, spectra and structure of hydrazinium metal chloride and thiocyanate complexes.* IISc, Bangalore.

19. Subba Rao, Y.V. *New class of montmorillonite catalysts for selective organic transformations.* Osmania.

20. Varshney, Manoj. *Structural and dynamic studies of aerosol-OT microemulsions by pulse NMR spectroscopy.* Delhi.

21. Veera Bhadraiah, U. *Synthesis of some heterocyclic compounds from 3-(w-bromoacetyl) coumarins and coumarin-3-carboxylic acids.* Kakatiya. Prof. T.V. Padmanabha Rao, Department of Chemistry, Kakatiya University, Warangal.

22. Venkata Ramana Charya, A. *Catalysed redox reactions of Cu(III), Ag(III) and some organic substrates: A kinetic study.* Kakatiya. Dr. T. Raviprasad, Reader, Department of Chemistry, Kakatiya University, Warangal.

23. Venkateswarlu, Ch. *Thermodynamics of mixed aqueous electrolyte solutions: An EMF study of activity coefficients.* Osmania.

Geology

1. Mukhopadhyay, Syamaprasad. *On some problems of optimum decisions in geological exploration and mining investment.* Calcutta.

2. Suresh Raj, Marla. *Studies on manganese micronodules and associated sediments of the Central Indian Ocean Basin.* Andhra.

Engineering & Technology

1. Balaji Rao, K. *Studies on reliability of reinforced concrete beams in cracking and ferrocement elements in tension and flexure.* IISc, Bangalore.

2. Baldev Raj. *Acoustic emission for characterising deformation and fracture during tensile testing in austenitic stainless steels.* IISc, Bangalore.

3. Bharath, S. *Mathematical modelling and analysis of railway pneumatic brake system.* IIT Delhi. Prof. B.C. Nakra, Department of Mechanical Engineering, Indian Institute of Technology, New Delhi and Prof. K.N. Gupta, Department of Mechanical Engineering, Indian Institute of Technology, New Delhi.

4. Bhattacharjee, B. *A study on the influence of void and moisture contents of some building materials in their thermal transport properties and implications on thermal performance of building envelope.* Prof. S. Krishnamoorthy, Department of Civil Engineering, Indian Institute of Technology, New Delhi.

5. Chouhan, Harish M. *Normal mode decomposition and its applications in ocean acoustics.* IISc, Bangalore.

6. Ghazvinian, Abdolhadi. *Prediction stability of underground openings by equivalent material modelling.* IIT Delhi. Prof. T. Ramamurthy, Department of Civil Engineering, Indian Institute of Technology, New Delhi and Dr. K.K. Gupta, Department of Civil Engineering, Indian Institute of Technology, New Delhi.

7. Ghosh, Gautam. *Studies on gunnoscillator and associated problems.* Calcutta.

8. Gopala Rao. Ch. *Studies on energy conservation aspects of bagasse fired boiler of a sugar mill.* PAU.

9. Guru Murthy, K.S. *Behaviour of electrically stressed thin silicon dioxide (SiO_2) films.* IISc, Bangalore.

10. Jagbir Singh. *Some studies on balancing of flexible rotors.* IIT Delhi. Prof. K.N. Gupta, Department of Mechanical Engineering, Indian Institute of Technology, New Delhi.

11. Jain, Anil Kumar. *Sublimation transfer printing of cotton and polyester/cotton blends with disperse dyes.* IIT Delhi. Prof. R.B. Chavan, Department of Textile Technology, Indian Institute of Technology, New Delhi.

12. Kale, G.M. *Thermodynamic studies on selected ceramic oxide systems.* IISc, Bangalore.

13. Kamath, K. Ramesh. *Low cost microdisplacement measurement using opto electronic encoders: Some studies and results.* IISc, Bangalore.

14. Khare, Malayaranjan. *Optimization of rolling region of wire rod mill of Bhillai Steel Plant through computer based system.* Nagpur. Dr. Ing G.N. Garud, Principal, Visveswaraya Regional College of Engineering, Nagpur.

15. Kuldip Singh. *Digital beam forming arrays.* IISc, Bangalore.

16. Lakshminarayana, K. *Study of cast-in-situ cement concrete multi-circular vented highway bridge.* Bangalore. Dr. M.K.L.N. Shastry, Principal, Visweswara College of Engineering, Bangalore and Prof. H. Venkatachala Murthy.

17. Mathias, Praxedes Canute. *Systolic architectures for realistic 3-D graphics.* IISc, Bangalore.

18. Mohan Rao, G. *Studies on DC reactive magnetron sputtering preparation and characterization of Cu-Cu_2O cermet films.* IISc, Bangalore.

19. Narayanasamy, P. *Multiplex and dual multiplex algorithms for solving LP problems using data structure concepts.* Anna.

20. Prodhan, Krishna Chandra. *Analysis specification and synthesis of strong motion earthquakes.* IISc, Bangalore.

21. Raghav, Bhoopesh. *Online interface for # 7 signaling system.* JNU. Col. C.P.C. Nath.

22. Rajan, N.K.S. *Experimental and computational studies of fluid dynamics and heat transfer in spherical vessels.* IISc, Bangalore.

23. Rama Moorthy, N.V. *Demand oriented route network generation and appraisal for an integrated urban mass transit system.* Kakatiya. Dr. S. Raghavachari, Department of Civil Engineering, Regional Engineering College, Warangal.

24. Sharma, Sanjay, *Mathematical modelling and experimental study of a solar drying system.* IIT Delhi. Prof. H.P. Garg, Centre for Energy Studies, Indian Institute of Technology, New Delhi and Dr. S.K. Gupta, Department of Mechanical Engineering, Indian Institute of Technology, New Delhi.

25. Sorayao, V.P.S. *An analysis of elastic plastic deformation in presence of temperature field.* IIT Delhi. Prof. A. Mishra, School of Industrial Engineering, Purdue University, West Lafayette, USA.

26. Sreenatha, A.G. *Dynamics and control of flexible spacecraft.* IISc, Bangalore.

27. Sripathi Rao, S.B. *Community response to components of urban transport for work journeys through mode choice models.* Kakatiya. Dr. S. Raghavachari, Prof., Department of Civil Engineering, Regional Engineering College, Warangal.

28. Tagore, G. Ravindranath. *Development of software interpolators for computerised numerical control systems.* Kakatiya. Prof. R.L. Murthy, Head, Department of Production Engineering, Regional Engineering College, Warangal.

SCHOOL OF CORRESPONDENCE COURSES
ANDHRA UNIVERSITY, WALTAIR
ADMISSION NOTIFICATION

Applications are invited from the candidates residing in India for admission into the following Courses in the School of Correspondence Courses for the Academic year 1990-91.

COURSE	*ELIGIBILITY*
I. TWO YEAR POST-GRADUATE COURSES:	
1. M.A. English:	B.A./B.S.c./B.Com.
2. M.A. Hindi:	B.A./B.Sc./B.Com. with Hindi as one of the subjects of study (Please see Prospectus for full details of eligibility)
3. M.A. Telugu:	B.A./B.Com. or B.A. (Special) with Telugu as a subject or B.Sc. (Home Sciences) with a study of Telugu for 2 years with a maximum of 100 marks of each year (Please see Prospectus for full details of eligibility)
4. M.A. Economics: (English Medium only)	B.A. with Economics (Main or Ancillary)
5. M.A. History: (English Medium Only)	B.A. (Pass or Hons.)/O.T.B.A./B.A. (OL) with History as one of the subjects of study.
6. M.A. Politics: (English Medium only)	B.A. with Politics or Public Administration as one of the subjects of study or B.L. or B.G.L.
7. M.A. Public Administration: (English Medium only)	B.A. with Politics or Public Administration as one of the subjects of study or B.L. or B.G.L.
8. M.A. Sociology: (English Medium only)	B.A. Degree with Social Sciences.
9. M.Com. (English Medium only):	B.Com. only.
II. ONE YEAR PROFESSIONAL COURSE:	
10. Post-Graduate Diploma in Co-operation and Rural Studies (English Medium only):	B.A. (Economics as Main or Ancillary), B. Com./B.Sc. (Agriculture) for inservice candidates working in Cooperatives and allied institutions including non-officials. Or B.A./B.Com./B.Sc. for permanent employees of Co-operatives who have put in more than 15 years of service, subject to production of a certificate of employment countersigned by the concerned Deputy Registrar of Co-operatives.

Applications will be issued from 12.11.1990. Filled-in applications should reach the undersigned on or before **31-12-1990.**

Intending candidates may write to the undersigned by DESIGNATION for Application form and Prospectus by sending Rs. 10/- by Demand Draft/Money Order in favour of the Director, School of Correspondence Courses, Andhra University, Waltair-530003. The candidates have to write their name, address and course for which they want the prospectus on the back of the D.D. or M.O. coupon which ever is applicable. The candidates may also remit cash at the CASH COUNTER of the School of Correspondence Courses towards Application Form and Prospects. Postal Orders and Cheques will not be accepted.

Other Places of Sale of Applications:

The prescribed admission application forms and prospectus are also available at the following places on payment of Rs. 10/- through Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Waltair-530003.

(A) At New Delhi: (1) Sales Counter, Association of Indian Universities, A.I.U. House, 16 Kotla Marg, (2) Sales Counter, Andhra Pradesh Bhavan, 1 Ashoka Road and (3) Sri Venkateswara College, Dhaula Kuan, Benito Jaurez Road.

(B) Study Centres: (1) Government College, Srikakulam, (2) M.R. College, Vizianagaram, (3) Mrs. A.V.N. College, Visakhapatnam, (4) Government College, Rajahmundry, (5) P.R. Govt. College, Kakinada, (6) Sir C.R. Reddy College, Eluru, (7) S.R.R. & C.V.R. College, Vijayawada, (8) A.C. College, Guntur, (9) D.N.R. College, Bhimavaram, (10) A.B.M. College, Ongole, (11) Silver Jubilee College, Kurnool, (12) Indian Institute of Management and Commerce, Hyderabad, (13) A.M.A.L. College, Anakapalle, (14) R.S.R.K.R.R. College, Bobbili, (15) Noble College, Machilipatnam, (16) V.S.R. & N.V.R. College, Tenali, (17) Govt. Degree College, Narasannapeta, (18) S.S. & N. College, Narsaraopeta, and (19) S.G.S. College, Jaggayyapeta.

Extension of Last Date for Degree Courses and P.G. Diploma Courses:

The last date for the issue of Prospectus and Applications and receipt of filled-in applications for the following Courses in case of which the original Admission Notification issued on 11-8-1990 has been extended upto 19-11-1990.

I. Six Months Foundation Course: Introductory Course

II. Three Year Degree Courses for the Academic Year 1990-91: (1) B.A. (2) B.Com. (3) B.Sc.

III. One Year P.G. Diploma Courses for the Calendar Year 1990-91: (1) P.G. Diploma in Functional English, (2) P.G. Diploma in Environmental Studies, and (3) P.G. Diploma in Translation.

The School has no agents and takes no responsibility for the prospectus issued and promises made for admission by any other institution.

WALTAIR,
1-11-1990.

Prof. V. Abraham
DIRECTOR

UNIVERSITY OF DELHI SOUTH CAMPUS

Master of Finance and Control (MFC) Programme

ADMISSION NOTICE

The University of Delhi South Campus announces admission to the fifth batch of the two-year full-time professional course MASTER OF FINANCE AND CONTROL (MFC) for the academic session 1991-92 beginning from July 1991. The main objective of this course is to equip the participants with requisite skills in financial planing, control and decision-making. It offers career prospects in corporate finance, investment management, financial services, and related areas.

Minimum Eligibility Requirements: Bachelor's (Hons.) degree in Arts, Commerce, Social Sciences with 50% marks, (ii) B. Com./B.A. (Pass) and B.Sc. (Hons) degree with 55% marks, (iii) Bachelor's degree in Engineering & Technology, B.Sc. (G) and Bachelor's (Hons) degree in Maths, OR and Statistics with 60% marks.

Test Centres: The test will be held in February 10, 1991 at Delhi, Bombay, Calcutta, Madras, Hyderabad, Kanpur and Bhopal. The University can change/cancel any test centre.

Placement: The placement services are available to the students. The students of the previous batch were absorbed in foreign banks and leading public and private sector companies, the average emoluments being Rs. 4,000/-

How to Apply: The prospectus and application form may be obtained between 9.30 a.m. and 1.00 p.m. personally from the Office of the MFC Programme Coordinator (Room No. 305-A), Arts Faculty Building, University of Delhi South Campus, Benito Juarez Road, New Delhi-110021 on payment of Rs. 10/- in cash or through post by sending a Bank Draft or Rs. 10/- payable at SBI, UDSC Branch (Code No. 8778) in favour of Director, University of Delhi South Campus along with a self-addressed and stamped envelope (6″ × 9″) bearing stamps of Rs. 2/-. Completed application form along with a self-addressed envelope bearing stamp of Re. 1/- should reach the Office of the Programme Coordinator latest by 21st December, 1990.

Candidates appearing for the final year of Bachelors Degree examination can also apply.

Professor M.Y. Khan
Programme Coordinator

OSMANIA UNIVERSITY

HYDERABAD-500 007. (A.P.).

ADVERTISEMENT No. 6/90 **Dated: 9-11-1990.**

Applications in the prescribed form together with the registration fee of Rs. 10/- payable through IPO/Demand Draft only (M.O. is not acceptable, drawn in favour of the Registrar, Osmania University are invited for the following posts in the University service so as to reach the undersigned in person or by post **on or before 3-12-1990**:

S.No.	Department	Professor	Reader	Lecturer	Remark
	GROUP-I				
ARTS					
1.	Arabic	1	1*	1*	
2.	Hindi	—	3	3*	
3.	Journalism (SAP)	—	1	1	(Editorial RA/Lecturer)
4.	Linguistics	—	1	—	
5.	Marathi	1	2	2	
6.	Philosophy	2	2	1	
7.	Urdu	—	2	—	
COMMERCE					
8.	Business Management	1	—	2	
SOCIAL SCIENCES					
9.	Economics	1	—	—	
10.	History	1	2	—	
GROUP-II					
SCIENCE					
11.	Astronomy	1	—	—	
12.	Botany	—	—	2*	
13.	(a) Genetics	—	1	—	
	(b) Institute of Genetics	1	—	—	
14.	Microbiology	—	—	1	
15.	Physics	—	—	2*	
16.	Zoology	—	—	1	
GROUP-III					
ENGINEERING					
17.	Civil Engineering	1	3	—	
18.	Electronics & Communication Engineering (Bio-Medical)	—	1	—	

*Conquential vacancies, if any.

PAY SCALES

Professor : Rs. 4500-7300
Reader : Rs. 3700-5700
Lecturer : Rs. 2200-4000

AGE: (As on last date of receipt of applications)

Professor : Not more than 50 years
Reader : Not more than 40 years
Lecturer : Not more than 35 years

Note:

(i)Age limit does not apply to the employees of this University.

(ii)Relaxation in age to the extent of five years shall be granted to the candidates belonging to SCs, STs and BCs.

(iii)Relaxation in age to the extent of five years shall be granted to the teachers who have put in at least five years of service in any of the colleges affiliated to the Osmania University.

RESERVATIONS

15%, 6% and 25% reservations as per roster system are made for the candidates belonging to Scheduled Caste, Scheduled Tribe and Backward Classes respectively for the post of Readers and Lecturers only.

							B.C.		
GROUP	Category	Total posts	O.C.	SC	ST	A	B	C	D.
Group I	Readers	13	9	—	1	1	1	—	1
	Lecturers	6	4	—	1	—	1	—	—
Group II	Readers	1	1	—	—	—	—	—	—
	Lecturers	2	1	1	—	—	—	—	—
Group III	Readers	4	3	—	—	1	—	—	—

Full particulars and other details of qualifications etc., along with the prescribed application form can be had from the Director, Department of University Press & Publications, Osmania University, Hyderabad-7 on payment of Rs. 10/- in person or by sending an IPO/Demand Draft together with the postal charges made payable to the Director and by sending a self-addressed envelope of 14½ × 26½ Cms.

REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. A&E-II/11/90

Applications are invited for the following posts:

(1) **Cartographic Assistant** (Reserved for ST)

EQ: (a) Master's degree in Geography with good percentage and Diploma in Cartography; (b) Ability to plan and draw maps, illustrations and help the students in planning and making of maps; (c) preferably with some experience in drawing maps and computing the data necessary for maps.

(2) **Technical Assistant in Biotechnology** – one (reserved for SC). **EQ:** B.Sc. in Physics or Chemistry or related subject with three years experience. OR M.Sc. in Physics or Chemistry or related subject with two years experience.

(3) **Research Associate in Biotechnology:** (One). **EQ:** Ph.D. in Biophysics, Chemistry, Bio-chemistry or any branch of Modern Biology.

(4) **Research Associate in Disarmaments Studies**– (One) **EQ:** (a) First or High Second Class Master's Degree in International Relations/Political Science/History/Economics. (b) A doctorate degree published research work in the field of International Relations. **DQ:** (a) Specialization – In problems of Indian Defence, (b) some teaching experience.

(5) **Documentation Officer** (Reserved for Scheduled Caste candidate interchangeable with Scheduled Tribe) – (One): **EQ:** (a) Good academic record with at least a high Second Class Master's Degree in Geography/Economics/Sociology/Statistics. (b) Master's Degree in Library Science with First Class or High Second Class. **DQ:** Persons with experience of about two years in handling Statistical Documents and Quantitative Data would be preferred.

SCALE OF PAY:

Cartographic Assistant Technical Assistant	Rs. 1400-2300
Documentation Officer	Rs. 2200-4000

Research Associates can be considered for categories A,B,C or D i.e. Rs. 2200-100-2700, Rs. 2700-100-3200, Rs. 3200-100-3700, Rs. 3700-125-4325 respectively. Age Limit: 45 years for men and 55 years for women candidates. 10% of the posts of Research Associates are reserved for SC/ST candidates. All the posts of Research Associates are initially for 3 years and extendable for 2 years.

Any of the qualifications/experience may be relaxed at the discretion of the University. It will also be open to the University to consider the names of suitable candidates who may not have applied.

Application forms may be obtained free of cost in person or by sending a self-addressed (23 cm × 10 cm) duly stamped of the value of Re. 1/- to the Deputy Registrar (A&E-II), Room No. 204-B, Administrative Block, Jawaharlal Nehru University, New Delhi-110067. The applications in the prescribed form complete in all respect duly forwarded by the competent authority (for those in service) should reach this University latest by **13th December, 1990.**

Abbreviations:
EQ—Essential Qualifications,
DQ—Desirable Qualifications.

ANNAMALAI UNIVERSITY

RAJAH MUTHIAH INSTITUTE OF HEALTH SCIENCES

(Non-grant Institution)

NOTIFICATION NO. 1(S)/90

Applications are invited in the prescribed form for the following posts in the Rajah Muthiah Medical College of this University:

		NO. OF POST
I.	**PHYSIOLOGY**	
	Reader	1
	Lecturer	1
II.	**BIO-CHEMISTRY**	
	Professor	1
	Reader	1
III.	**PHARMACOLOGY**	
	Professor/Reader	2
	Reader	1
	Lecturer	3
IV.	**PATHOLOGY**	
	Professor/Reader	1
	Reader	1
	Lecturer	2
V.	**MICROBIOLOGY**	
	Professor	1
	Professor/Reader	1
	Reader	2

VI.	**FORENSIC MEDICINE**	
	Professor	1
	Professor/Reader	1
	Reader	1
	Lecturer	3
VII.	**SOCIAL & PREVENTIVE MEDICINE**	
	Professor/Reader	1
	Reader	2
	Lecturer	4
VIII.	**MEDICINE**	
	Professor/Reader	1
	Reader	4
	Lecturer	2
IX.	**SURGERY**	
	Reader	2
	Lecturer	3
X.	**OBSTETRICS & GYNAECOLOGY**	
	Professor	2
	Professor/Reader	1
	Reader	2
	Lecturer	1
XI.	**T.B. & CHEST DISEASES**	
	Professor	1
	Professor/Reader	1
	Reader	1
	Lecturer	1
XII.	**VENEREOLOGY & S.T.D.**	
	Professor	1
	Reader	1
	Lecturer	1
XIII.	**DERMATOLOGY**	
	Professor	1
XIV.	**ORTHOPAEDICS**	
	Professor/Reader	1
	Reader	1
XV.	**E.N.T.**	
	Reader	1
XVI.	**OPHTHALMOLOGY**	
	Professor	1
XVII.	**RADIOLOGY**	
	Professor/Reader	1
	Reader	3
	Lecturer	2
XVIII.	**ANAESTHESIOLOGY**	
	Lecturer	4
XIX.	**LECTURER-CUM-**	
	Epidemiologist	2
XX.	**MATERNITY & CHILD WELFARE**	
	Officer-cum-Lecturer	1

QUALIFICATIONS

Professor:

Applicant should have 4 years of teaching experience as Reader in a Medical College besides the prescribed educational qualifications.

Reader:

Applicant should have 5 years of teaching experience as Lecturer in a Medical College besides the prescribed educational qualifications.

EDUCATIONAL QUALIFICATIONS

For Sl. Nos. I to XVIII:
M.B.B.S. with P.G. in the relevant subject.
For Sl. No. XIX:
M.B.B.S.; D.P.H.
For Sl. No. XX:
M.B.B.S. with D.C.H.
(Desirable: 1 year experience in a Neonatal Unit or Childrens' Hospital)

SCALE OF PAY

Professor:
Rs. 4500-150-5700-200-7300 with admissible allowances.
Reader:
Rs. 3700-125-4950-150-5700 with admissible allowances.
Lecturer:
Rs. 2200-75-2800-100-4000 with admissible allowances.

Candidates, if selected, should serve for a specified period.

Higher start will be considered keeping in view long experience, special qualification, etc.

Candidates invited for interview for the posts of Professors and Readers will be paid a single second class to and fro railway fare.

Those who are in service should route their applications through proper channel.

Application forms can be had from the undersigned on payment of Rs. 10/- by Cash/Demand Draft/Postal Order (Not refundable). Filled in applications (with 5 additional copies) should reach the undersigned before **7.12.1990.**

ANNAMALAINAGAR. **REGISTRAR**
3.11.1990.

रानी दुर्गावती विश्वविद्यालय, जबलपुर

क्रमांक/स्था०/90/843
जबलपुर, दिनांक 31.10.90

विज्ञापन

विश्वविद्यालय स्नातकोत्तर हिन्दी एवं भाषा विज्ञान विभाग में प्राध्यापक हिन्दी एवं भाषा विज्ञान के एक पद के लिए वेतनमान रुपये 4500-150-5700-200-7300 में निर्धारित प्रपत्र (आठ प्रतियों में) आवेदन पत्र दिनांक **7.12.90** तक आमंत्रित है। निर्धारित प्रपत्र रुपया 25/- पोस्टल आर्डर भेजने पर कार्यालय से प्राप्त किये जा सकते है।

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या

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रानी दुर्गावती विश्वविद्यालय
जबलपुर

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ALIGARH MUSLIM UNIVERSITY
GARH

Advertisement No. 8-A/90-91,
Dated: 10th November, 1990.

Applications on the prescribed form are invited for the following posts:

It is not obligatory on the part of the University to call for interview every candidate who possesses the essential qualifications and no representation in this regard will be entertained from any candidate.

1. **University Registrar**
2. **Controller of Examinations**

Scale of Pay: Rs. 4500-150-5700-200-7300 plus allowances.

Qualifications

Essential:

1. A postgraduate degree with atleast 55% marks or its equivalent grade.

2. At least 15 years of experience as Lecturer/Reader of which 8 years should be in Reader's grade with experience in Educational Administration.

   OR

   Comparable experience in research establishments and other institutions of higher education.

   OR

   15 yers of administrative experience of which 8 years as Deputy Registrar or an equivalent post.

Desirable: For the post of Registrar the candidates are expected to have considerable experience in:

(a) designing of agenda and drafting of the Minutes of the various University authorities, as the Registrar is the Secretary of University Court, Executive and Academic Councils;

(b) handling legal matters as the Registrar has to represent the University in suits or proceedings by or against the University, sign power of attorney and verify pleadings;

(c) exercising close and effective supervision, monitoring and implementation of policy decisions.

Candidates are also expected to have knowledge of modern methods of management and their application in an Institution of higher education and research.

For the post of **Controller of Examinations** the candidates must possess experience of conducting all University Examinations of the University; superintend all arrangements necessary therefore; and exercise close and effective supervision, monitoring and control over the numerous stages of the examination process. They are also expected to have knowledge of/and interest in modern methods of management and their application, especially application of Computers in examinations and other related work.

Note:

(i) The appointment of Registrar and Controller of Examinations shall be made for a tenure of five years, which can be renewed for similar terms.

(ii) Those who have applied in response to Advts. No. 1-A/89-90 dated 15.4.1989 and Advt. No. 5-A/90-91 dated 16.8.1990 need not apply again.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single second class Railway fare only.

Prescribed application form and instructions may be had from the Deputy Registrar (Selection Committees), Registrar's Office on payment of Rs. 10/- to be deposited in the Cash Section, Finance Office, AMU or through an Indian Postal Order payable to the Finance Officer, AMU either personality or by sending a self-addressed stamped envelope of size 9×4″.

Last date for receipt of application is 15.12.1990 (during office hours). Incomplete applications and those received late will not be considered.

Professor S.M. Osman
REGISTRAR

SAMBALPUR UNIVERSITY
JYOTI VIHAR: BURLA

Advertisement No. 1663/Estt.
I/I/110/PCNSS/90 Dated: 31.10.1990

Applications in the prescribed forms with attested copies of mark sheets and certificates of each examination passed are invited for the post of PROGRAMME CO-ORDINATOR (whole time) N.S.S.

Qualification

Second class M.A./M.Sc./M.Com./M.Ed./LL.B./B.Sc. (Engg.)/M.B.B.S. or equivalent qualification with atleast five years of teaching experience in a college. The candidate should have adequate experience of handling students and offering them leadership in various programme.

Desirable Qualification

Minimum two years experience of organising and developing N.S.S. activities.

Scale of Pay

Rs. 2200-4000/-

The post carries usual dearness allowances, C.P.F. and Gratuity facilities sanctioned by the University from time to time. A person already in service will carry his own scale of pay if selected.

Age of Retirement

60 years.

Appointment will be made on purely temporary basis. Seven copies of application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 25/-. Candidates who intend to receive their forms by post are required to send (a) Bank Draft of Rs. 25/- drawn in favour of Comptroller of Finance, Sambalpur University payable at United Commercial Bank, Katapali, (b) a self-addressed envelope (23cm × 10cm) with postage stamp worth Rs. 10.00 affixed to it with the words "APPLICATION FORM FOR THE POST OF PROGRAMME CO-ORDINATOR (N.S.S.)" superscribed on it. Money Order/I.P.O./Cheques will not be accepted.

The last date of receipt of application in the Office of the Sambalpur University, P.O. Jyoti Vihar, Burla, Dist. Sambalpur is 30.11.90. Applicants in service are required to send their application through proper channel.

The candidates may be required to appear for an interview before a Selection Committee at his own expenses. Intimation will be sent to eligible candidates for appearing at interview in due course.

Issue of this advertisement does not make it binding on the University to make the appointment.

The selected candidates must join within one month from the date of issue of appointment letter.

All communications should be addressed to the Registrar by designation only.

REGISTRAR

BHARATHIDASAN INSTITUTE OF MANAGEMENT

TIRUCHIRAPALLI—TAMILNADU

ADMISSION TO THE MBA PROGRAMME, 1991-93

THE INSTITUTE

BIM is the first of the Schools of Excellence established by BHARATHIDASAN UNIVERSITY, TIRUCHIRAPALI. This is the first business school in India to have a direct linkage with an industry—the public sector giant BHARAT HEAVY ELECTRICALS LIMITED. The campus and living accommodation are within the BHEL complex providing direct access to BHEL's extensive facilities. The students pursue their academic programme with day to day contact with the real world of business and industry. The faculty includes highly qualified academicians, some of India's best managers and business leaders.

THE COURSE

The MBA programme is a two year, full-time residential course Specialisations are offered in Marketing, Finance, Operations and Systems & Human Resources Development.

BACK-UP FACILITIES

A well-stocked library, an advanced computer centre open all 24 hours of the day, air-conditioned class rooms and frequent guest lectures by senior professionals from business and industry create an enviable learning environment.

PLACEMENT

Full placement of all successful candidates in prestigious private and public sector firms with an average starting salary of Rs. 4,000/- Per Month underlines the quality of the MBA programme at BIM. Over 100 companies visited the campus last year, resulting in offers of appointment to all the fifty students.

TEST CENTRES

If you would like to be among the best managers in this country you need to appear for the Admission Test on SUNDAY, JANUARY 27th, 1991. Centres are at BANGALORE, BOMBAY, CALCUTTA, COCHIN, HYDERABAD, MADRAS, NEW DELHI and TIRUCHIRAPALLI.

ELIGIBILITY

Applicants should hold a Bachelor's or a Post Graduate Degree in any discipline with atleast 50% marks. Final year degree students may also apply, subject to the condition that they provide evidence of their pass with a minimum of 50% marks by July 15th 1991.

FOR PROSPECTUS & APPLICATION

MAIL (1) two typed self-addressed slips (9 × 6 cms)

(2) a crossed bank DD for Rs. 100/- (Rs. 35/- for SC/ST candidates, if they produce the certificate) drawn from any Nationalised Bank in favour of 'BHARATHIDASAN INSTITUTE OF MANAGEMENT, TIRUCHIRAPALLI', payable at TIRUCHIRAPALLI towards application fee for admission test and interview. (Local applicants can obtain admission material across the counter at the BIM office by paying in cash). No other mode of payment will be accepted.

To

Prof. Dr. N. Jayasankaran,
Admissions Co-ordinator,
Bharathidasan Institute of Management
P.B. No. 12, E.T. Hostel,
BHEL Complex,
TIRUCHIRAPALLI-620 014.

Candidates successful in the admission test will be called for an interview during the last week of May, 1991.

Last date for accepting completed application forms **DECEMBER 20, 1990.**

BIM

SCHOOL OF EXCELLENCE

Printed & Published by SUTINDER SINGH, on behalf of the Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi-110002. Grams: ASINDU. Phones: 3315105, 3313390, 3312305, 3310059 and 3312429. Telex: 31-66180 AIU IN
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16·10

University News

MONDAY, NOVEMBER 20, 1989 Rs. 2.50

Crisis of Academic Authority

●

Depoliticization of Education

●

Library Services for Distance Learners

●

Women in Rural Development

●

University of the World

●

Computerised Cataloguing System

School of Correspondence Courses

ANDHRA UNIVERSITY-VISAKHAPATNAM-530 003

ENTRANCE EXAMINATION NOTIFICATION—JANUARY, 1990

ENTRANCE EXAMINATION UNDER MODIFIED SCHEME FOR LIBERALISED ADMISSION INTO B.A./B.COM. COURSES WITHOUT ANY FORMAL ACADEMIC QUALIFICATION

Applications are invited from the candidates residing in India for Entrance Examination for admission into I Year B.A./B.Com. degree courses through the School of Correspondence Courses.

Candidates who pass the Entrance Examination are eligible for admission into I Year B.A./B.Com. degree in the School of Correspondence Courses and they will be admitted as Supplementary Batch candidates during the academic year 1989-90. The 1st year University Examinations for these candidates will be held in September/October, 1990 and 2nd and 3rd year Examinations will be held with a gap of one year eaeh thereafter.

No minimum qualification is required to appear for the Entrance Examination except that the candidates should have completed 21 years of age by 1.1.1990. The candidates have to complete the entire three course of study through the School of Correspondence Courses only.

Applications will be issued from 15th November, 1989. Duly filled-in Applications should reach this office on or before 20-12-1989. Applications received after the due date of 20.12.89 will be accepted on payment of penal fee at the following rates :

Upto 22.12.1989 (for first two days)	...	Rs. 2/-
Upto 30.12.1989 (between third and tenth day)	...	Rs. 10/-
Upto 08.01.1990 (between eleventh and twentieth day)	..	Rs. 50/-

Applications received after 08-01-1990 will not be accepted even with maximum penal fee.

Under the modified scheme of Entrance Examination, there will be four papers of one hour duration each and the examination will be conducted in two sessions on Sunday, the 28th January, 1990 from 9.00 a.m. to 11.00. a.m. and from 2.00 p.m. to 4.00 p.m. Examination will be conducted in one centre in each district in Andhra Pradesh besides the existing centres in the jurisdiction of Andhra and Nagarjuna Universities.

Intending candidates may write to the undersigned by DESIGNATION for application form, syllabus and model question papers by sending Rs. 10/- by Money Order or Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Waltair along with one self-addressed envelope of 9" × 6" size (without affixing postal stamps). The candidates may also remit cash at the Cash Counter in the School of Correspondence Courses towards application form. **Postal Orders, Cheques will not be accepted.**

The prescribed application forms, syllabus and model question papers are also available at the following two places at New Delhi and also at our 16 Study Centres on payment of Rs. 10/- through Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Waltair 530 003.

PLACES OF SALE OF APPLICATIONS

(A) At New Delhi : (1) Sales Counter, Association of Indian Universities, A.I.U. House, 16 Kotla Marg, (2) Sales Counter, Andhra Pradesh Bhavan, 1 Ashoka Road.

(B) Study Centres : (1) Government College, Srikakulam, 2. M.R. College, Vizianagaram, 3. Mrs. A.V.N. College, Visakhapatnam, 4. Government College, Rajahmundry, 5. P.R. Government College, Kakinada, 6. Sir C.R. Reddy College, Eluru, 7. S.R.R. & C.V.R. College, Vijayawada, 8. A.C. College, Guntur, 9. D.N.R. College, Bhimavaram, 10. A.B.M. College, Ongole, 11. Silver Jubilee College, Kurnool, 12. Indian Institute of Management and Commerce, Hyderabad, 13. A.M.A.L. College, Anakapalle; 14. R.S.R.K.R.R. College, Bobbili, 15. Noble College, Machilipatnam; 16. V.S.R. & N.V.R. College, Tenali.

The School has no agents and takes no responsibility for the prospectus issued and promises made for admission by any other institution.

Waltair
1.11.1989

Prof. V. Abraham
DIRECTOR

Note : The applicants should clearly mention whether they require Entrance Examination Application Form for B.A. or B.Com..

UNIVERSITY NEWS

VOL. XXVII NOVEMBER 20
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A Weekly Chronicle of Higher Education published by the Association of Indian Universities

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor:
SUTINDER SINGH

THE CRISIS OF ACADEMIC AUTHORITY

1330

A.K. Ghosh*

The syndicate of a university the other day scrapped the degree examinations conducted during the previous month as the superintendents of most centres had reported that candidates had resorted to unfair means on a large scale.

Then the Chief Minister stepped in. He called a meeting of Vice-Chancellors and prominent educationists to discuss the situation. The consensus was that the University's earlier decision to scrap the examinations would have to be examined by legal experts.

This incident raises an important question : who rules the University-Syndicate or the Government ? Students violated the regulations by indulging in mass copying, assaulting the invigilators and gheraoing the Vice-Chancellor. What was involved was the right of the University to discipline students and impose minimum standards of learning.

It is not the single case; it has become a regular feature in the academic world. So long as there is a scramble for degrees and so long as degree holders manage to bag prize posts, the universities have to find ways to dissuade students from resorting to unfair means in examinations. If the university authorities are convinced that examinations are not conducted in a fair manner, have they not the power to cancel the examinations ? Should they wait for the green signal from the Government ? Should a syndicate be made to revise its decision if it impinges on the interest of the political party ?

Educationists will agree that the University bodies are supreme in academic matters. The university is not the tool of the Government, still less is it the instrument of the political powers of the day. It is vulnerable to Government blackmail because it depends on the Govt. for finance. When Harvard University began to consider its role in the New World that followed World War II, Mr. Conart laid it down as a first principle that no senior appointment on Harvard faculty should be dependent on financing beyond Harvard's own control. This policy kept Harvard free from Government influence. It seems Indian universities have yet to learn this lesson.

No university can function without money supplied by the taxpayers. Hence the universities are accountable to the nation or more precisely to the Government. What, it may be asked, ought to be the boundaries to Government control ? It could be claimed that he who pays the piper has the right to call the tune, to the extent of reorganising university courses, making appointments as also asking the syndicate to take or revise a decision. In other words, there exists nothing like academic freedom. A few years ago the Vice-Chancellor of Kanpur University went on record the 'autonomy of Universities was in danger' because of political pressure. Political pressure was being exercised in matters relating to affiliating colleges, prescribing courses of studies and even in examinations.

**Lecturer, Dept. of English, Falakata College, Dist. Jalpaiguri, W.B.*

The autonomy of a university truly means, argues Prof. A.K. Dasgupta, freeing it from political pressures. But can our political parties ignore the educational system that costs parents and the national exchequer together about Rs. 13,000 crores and involves 100 million educands ? As Prof. C.D. Rowley puts it, "every educational plan is a political document". And the Government that funds the plan has political commitments to fulfil.

Few planned activities make intervention in the life of the polity so easy as education does. Take for example the introduction of compulsory primary education in England. Following the Electoral Reform of 1861 which firmly established democracy there, the governing classes decided, in their own interest, to teach voters to read and write. Robert Lowe, Chancellor of the Exchequer, had said, "We must educate our masters". An Act made schooling upto the age of 12 compulsory. That was unmistakably a political act.

Today, the governing classes in many countries use schooling as an effective means of political control of the masses. This is indeed the Government intervention. Intervention in the life of a large section of the Indian polity occurs when number of persons are denied higher education, which provides scarce resources of high value. We have one set of rules for those who can pay capitation fees, another for those who cannot, and still another for the scheduled castes and tribes. Again, a student who has marginally passed the +2 examination may get admission, to a B.A./B.Sc. course somewhere, but another who has done very well in it may yet be turned down by a technical college if he misses a rank in the Joint Entrance Examination.

In brief, it is the Government that decides who is to be taught, what, by whom, for how long and in what ways. We can see how gimcrack institutions have been set up since independence merely to rally support for political parties. We can see how the few good institutions that exist now have become virtually reserved for the children of the bigwigs including politicians. We can see how non-conformist teachers, principals and vice-chancellors are being gheraoed, hounded out or gunned down.

We are reminded of a long back proposal to make universities accountable to legislators regarding utilization of public funds placed at their disposal. Though their accounts today are looked into by Government auditors, they are not placed before the legislatures except in one or two cases. From time to time this arrangement has been criticised by the Public Accounts Committee of Parliament. But as the Education Commission has rightly argued, a debate in a legislature on the financial affairs of a university will only make it an issue in party politics which is far from desirable. All this is not to suggest that there should be no check at all on how the universities manage their financial affairs but to emphasise that any such control is best exercised by the University Grants Commission. It should devise in each university a suitable system of internal audit.

Whether the universities are particularly well-placed to take a lead in this matter may be doubted. No one can be entirely complacent : the system is imperfect and could be bettered. There are cases when the universities have abused the confidence of the public : mediocre teachers have been appointed and academic standards diluted.

Academic freedom must depend on the quality of institution it imparts. Absolute freedom can deliver a second-rate university over to its own rear guard, to those who have a vested interest in the mediocre work and character of the university, and who are threatened by changes of any kind but especially by institutional mobility upward. An external authority must however retain sufficient power to support that segment of the university which is committed to a change until that segment is strong enough to ensure the continued evolution of the university in the desired direction.

There is a moment when the forces for change within the university are strong enough to deal with their own conservatives : a wise external authority will at that point but not before and not much after grant the university the absolute freedom over its own academic affairs that it needs to make the moves towards strength and distinction. These are subtle and difficult judgements which may get lost in party politics. Moreover, in a developing country, a university can become a source of vested interest. It has been asserted that universities of the developing countries have failed to resolve many issues about their contribution to development. The root cause of this failure lay in the concept of social progress as "a linear path of change" along which the industrialised nations had already travelled. The conclusion is that the university in a developing country "is in the eye of the storm which is brewing about the nature of underdevelopment and the goals of development." It is high time to take up the debate lest the storm breaks out.

The tension between democracy and efficiency is real. The political parties tend to interfere on the point of efficiency. The Vice-Chancellors must be independent and firm. Whenever they are confronted with a cruel choice they should not resign and opt out as many Vice-Chancellors have done. The battle must be fought and carried to its logical end. The university bodies must take the final decision—but decisions must be taken after every individual has had a chance to speak his view and be heard. The executive groups of the university must be small enough to act fast but they must represent all sections of the community. The idea of smallness in human organization is aptly applicable to Indian universities. Small universities will foster healthy relations between students and teachers and work efficiently: there will be little room for political interference and arm twisting.

Recent history shows what happens when university senators and vice-chancellors seem to put inefficiency before democracy, or where senior professors seem to dominate the system to the exclusion of students and younger staff. It is important that universities should master modern administrative techniques. But it is even more important that they should welcome new blood into their governing establishments and this widening process should continue. Unless the universities understand the treachery of political interference and absorb the new forces being unleashed by the prospects of something approaching mass higher education they might as well pack up their tents before they are torn apart.

Never mind academicians ! Carry on the UNESCO documents—"Learning to Be" and "No Limits to Learning". Do abide by the advice of the former President Zail Singh to 'eschew politics' for yourself and be complacent with Prof. Nurual Hasan's (former Union Education Minister) assertion to politicians to clear out of the campus. There is always a silver lining in the cloud. □

ARIC PUBLICATIONS

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CROP RESEARCH : An international journal published twice in a year in June and December, with one volume per annum. It is open to articles in English based on original research relating to basic and applied aspects in the field of Agril. Botany, Agril. Chemistry & Biochemistry, Agril. Meteorology, Agronomy, Entomology, Farm Forestry, Genetics, Horticulture, Microbiology, Mycology & Plant Pathology, Nematology, Plant Breeding, Seed Technology, Soil Science, Vegetable Crops, etc. The review on current topics and recent books on agriculture are also published.

BOOKS

1. FUNDAMENTALS OF IRRIGATION AND FERTILIZERS by Vedpal Singh pp. 236, Rs. 120/- (hb) and Rs. 65/- (pb).
2. PRINCIPLES OF IRRIGATION AND DRAINAGE (in Hindi) by Vedpal Singh, A.S. Faroda and R.S. Hooda, pp. 132, Rs. 35/- (pb).

For enquiries, please write to :

The Managing Director
Agricultural Research Information Centre
49, PRITI NAGAR, HISAR-125004
INDIA

Students' Attitude Towards Depoliticization of Education

Mamota Das,* Raka Rathor**

Introduction

The need for depoliticization has been stressed by students, parents, guardians, teachers and administrators on the ground that without this, it will not be possible to cleanse the universities and establish a suitable environment for work. (*Challenge of Education*, 1985, p. 115).

It has been found that there are several factors responsible for the problem of student unrest and activism, which are economic (growing educated unemployment and consequent feeling of insecurity and frustration), administrative (unsympathetic and indifferent handling of student matters by authorities), political (high politicization of student leaders, vested interest and support of political parties and instigation of politically oriented teachers) and academic (lack of adequate teacher-student contacts, overcrowded classrooms, poor hostel facilities and high academic demands than could be met). Among all these factors, the main factor is found to be political.

The application of educational means for political purposes of community interest threatens or destroys educational efficiency and effectiveness. But should politics be considered as the villain of the piece ? Is it not required on the part of the students that they gain a certain political awareness so that they become better citizens in this country's democratic set up ? It is also said that political system must have sufficient influence on the educational system, to shape educational policies and use of educational resources in ways that are socially responsive. One does not know, however, where to fix the boundaries and therefore, there is no wonder that this involves conflict and competition between politicians and educators to have control over personnel resources and goals involved.

A need was therefore felt to study the attitude of students towards depoliticization of education which shall throw light on the above issue.

AIMS

1. To study the attitude of male students towards depoliticization of education.
2. To study the attitude of female students towards depoliticization of education.
3. To compare the attitude of male and female students towards depoliticization of education.

Subsidiary AIM

1. To construct an attitude scale on depoliticization of education.

Hypothesis

There is no difference in the attitude of male and female students towards depoliticization of education.

Plan & Procedure

Method

Descriptive survey method.

Sample Selection

A sample of 100 students (50 male and 50 female) was selected from Dayalbagh Educational Institute (Deemed University).

Selection of Tool

Attitude scale on depoliticization of education was constructed by the investigators. This attitude scale has 34 statements in which 17 statements are positive and 17 statements are negative. These are on five-point scale (strongly agree, agree, undecided, disagree, strongly disagree). The maximum possible score on the scale is 170 and the minimum possible score is 34.

Technique

Testing technique.

Analysis & Interpretation of Data

A frequency distribution of scores as calculated from the attitude scale has been given in the Table-1 given on next page.

**Reader, Faculty of Education, Dayalbagh Educational Institute (Deemed University), Dayalbagh, Agra-5.*

***Lecturer, Dau Dayal Mahila Maha Vidyalaya, Firozabad (Agra).*

TABLE-1

Frequency Distribution of Male and Female

Attitude Scores

Attitude Score	MALE Frequency	MALE Cumulative Frequency	MALE Smoothed Frequency	FEMALE Frequency	FEMALE Cumulative Frequency	FEMALE Smoothed Frequency
150-159	2	50	2.66	1	50	1.00
140-149	6	48	8.33	2	49	2.66
130-139	17	38	11.00	5	47	6.00
120-129	10	25	11.33	11	42	9.66
110-119	7	15	3.00	13	31	11.33
100-109	4	8	4.66	10	18	9.66
90- 99	3	4	2.66	6	8	5.66
80- 89	1	1	1.33	1	2	2.66
70- 79	—	0	0.33	1	1	0.66

From Table-1, it becomes clear that maximum number of male students have attitude scores lying betwaen 130-139, whereas the maximum numbers of female have attitude scores lying between 110 and 119. It is also observed that maximum number of male students have a positive attitude towards depoliticization and the female students have a neutral attitude towards depoliticization. This has been made more clear through the scores of frequency distribution given in Fig. 1 (on next page).

The first and third quartiles from Table-1 were calculated which are presented in Table-2.

TABLE-2

Statistical Treatment of Male and Female Attitude Scores

	Q1	Q3
Male	115.93	136.85
Female	104 00	125.40

It is evident from Table-2 that the cutting scores on Q1 and Q3 of male students are more than those of females, which means that the attitude of male students are positive towards depoliticization of education.

By observing Table-3 it can be said that maximum number of male students have a positive attitude towards depoliticization of education, whereas maximum number of female students have a neutral or undecided attitude towards depoliticization of education. The reason for the female students showing neutral attitude may be that the female students are less political minded. They possibly have other fields of interest and have probably no emotional tie towards this issue in particular.

The positive attitude of male students towards depoliticization of education perhaps may be due to the reason that without the interference of political parties and with the absence of student unions in the institute, university education is successful.

TABLE-3

Distribution of Male and Female Students according to the Direction of Attitude Scale

	Attitude Score	BOYS Total No.	BOYS %	GIRLS Total No.	GIRLS %
Favourable	130-159	25	50	8	16
Neutral	100-129	21	42	34	68
Unfavourable	70-99	4	8	8	16
Total	70-159	50	100	50	100

TABLE-4

A Comparative Distribution of Attitude Score of Male and Female Students

Sex	Favourable	Neutral	Unfavourable	Total
Male	25	21	4	50
Female	8	34	8	50
Total	33	55	12	100

$x^2 = 13.16$* *Significant at .01 level

The perusal of the above table reveals that there is a difference between the attitudes of students of both sexes. This has been explained by the x^2 value which is highly significant at .01 level. Thus, it can be said that there is influence of sex variable on the attitude of students towards depoliticization of education. (See Fig. 2 on next page).

The investigators also analysed the responses of male and female students according to different items and made an attempt to see whother there were any statements in which there was any significant difference, which items among the positive and negative ones were emphasized more by the students and what are the merits and demerits of depoliticization of ducation according to them.

FINDINGS

1. Attitude of Male Students

The findings from an itemwise analysis of statements on male responses is as follows :

Causes of Politicization

1. Influence of mass media.
2. Tactless handling of students by authorities.

Consequences of Politicization

1. The college campus has become a breeding ground for potential politicians.

Frequency Distribution of Male and Female Attitude Scores

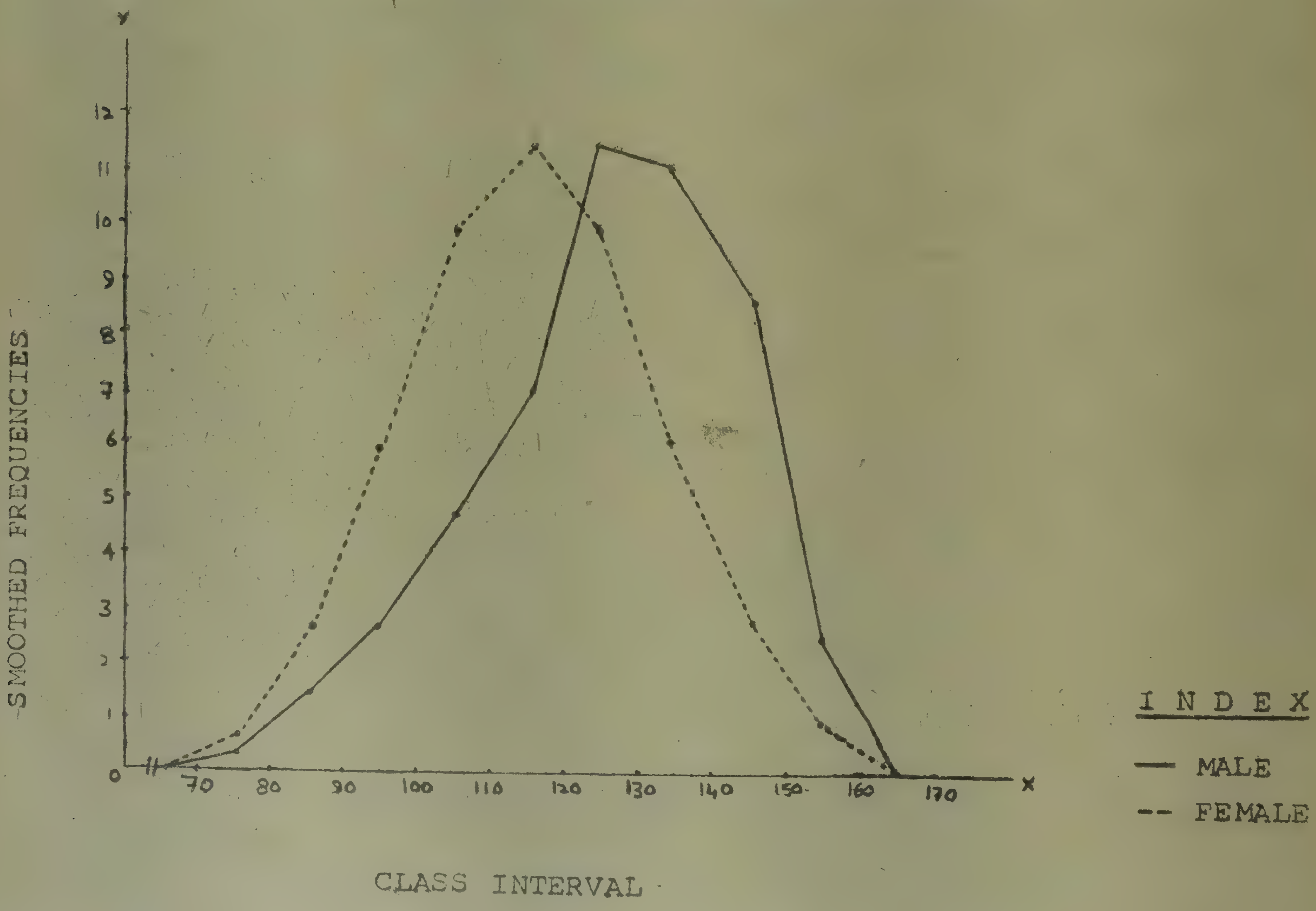

Fig. 1

2. The educational planners have become mere puppets in the hands of the politicians.
3. Education has come to be regarded as a device for catching votes.
4. University education is lacking in direction because of political pressures.

Merits of Depoliticization

1. Depoliticization will bring honesty in the admission of students.
2. Depoliticization will promote a better teacher-pupil relationship.
3. Depoliticization will be a boon for sincere students.
4. Depoliticization will inculcate in the students respect for the administration.

Demerits of Depoliticization

1. It is important to develop political awareness among students and depoliticization of education will stop this process.
2. Because of depoliticization the students will not be given the opportunity to develop their own points of view through the participation in the union activities.
3. Due to depoliticization the students will have no opportunity to do jointly useful social work, through the student unions.

2. Attitude of Female Students

The findings from an itemwise analysis of statements on female responses is as follows :

Causes of Politicization

1. Absense of proper guidance and counselling to students.
2. Lack of firm and impartial administrative measures.

Consequences of Politicization

1. Students take extreme measures to get demands accepted.
2. The students have spoilt their image by participating in politics.

(*Continued on page* 13)

A Comparative Distribution of Attitudes of Male and Female Students

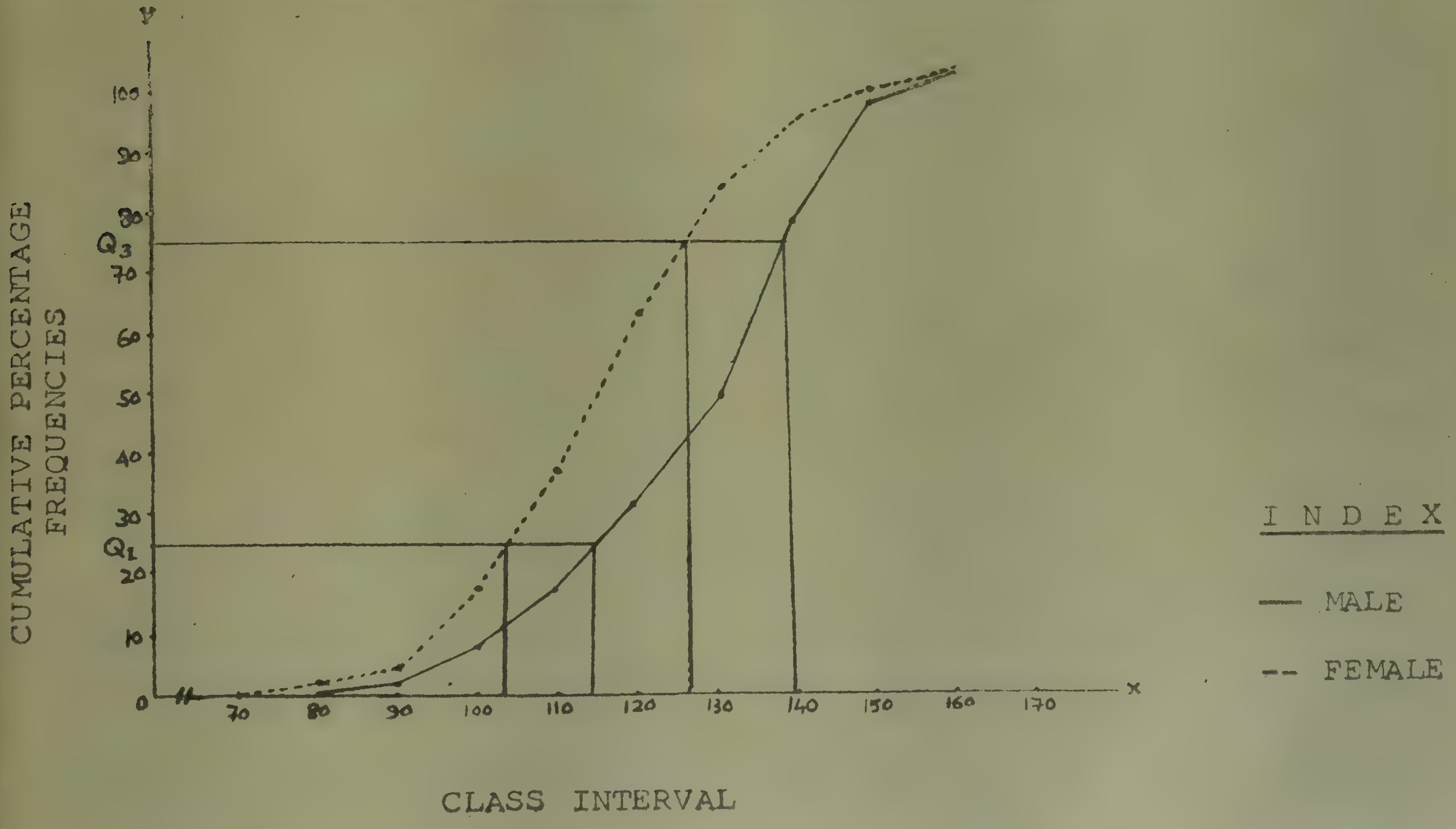

Fig. 2

Library Services for Distance Learners

Neela Jagannathan*

Introduction

The concept of 'distance' in distance education, a relatively new and innovative educational system, is linked to the separation of the teacher from the taught. In order to minimise this distance, it is essential for the distance teaching universities to provide strong student support services. In conventional universities, the teacher informs, guides, inspires and motivates the student by explaining, discussing and demonstrating through face to face classroom lectures, tutorials, laboratory sessions and seminars whereas in the open universities, the motivated learners pursue their studies independently through multi-media teaching such as Printed course material, Radio broadcasts, Television telecasts, and Audio-Video cassettes.

In order to overcome the lack of face to face classroom interaction, a two-way communication system, using various available media, is established through Self-instructional course materials, Study guides and experimental kits, Assignment responses and tutor comments, Linkages of computers to TV screens by telephone, Interactive video discs controlled by computer, Postal and electronic mails, and Telephone and telex messages. Apart from these, efforts are made to humanise the system by providing interpersonal contacts and guidance at the study centres through Counselling and Contact Programmes, Residential and Summer Schools, Laboratory Workshops, and Library Facilities.

Student Support Services for Distance Learners

In developing countries like India, where all the learners do not possess radio, tape recorder, television or VCR, it is necessary to have a network of study centres to provide strong student support services. The study centres are mostly located in existing educational institutions, and normally function on all holidays, sundays and evening hours of working days to make all facilities available to the students. These centres have been provided with audio-visual equipment to provide audio-video programmes to supplement the print medium whenever they visit the study centres. The coordinator of the centre organises contact and counselling programmes for discussion of study materials. The part-time counsellors, who are experienced teachers of various disciplines in the conventional universities, are engaged to impart tutorial facilities to the distance learners by solving their study problems and guiding them to utilise the facilities properly. Specialised integrated programmes like residential or summer schools and laboratory workshops provide opportunities for intensive coaching and to meet their tutors and peer groups in person. They help in enthusing and motivating the mature, independent learners to pursue their studies with confidence and determination. Tutor comments on assignment responses submitted for evaluation by the students prove helpful in the assessment of their progress and give feedback to the counsellors regarding the strength and weakness of the multi-media package designed for the distance learners. Each centre is equipped with a small library of core collection of reference books and textbooks useful for their study. Hence, the study centres represent the university's principal point of contact with the students and are responsible for the execution of the education programme efficiently and effectively.

The coordination of all these activities for varied instructional facilities at the various study centres is the function of the Division of Student Support Services. Therefore, it constitutes a major component of the organisational structure of the open universities.

Library Services to Distance Learners at the Home and Abroad

The provision of library and information services is of vital importance to distance students. In fact, library support occupies a prominent place in formal education and it is just indispensable for the distance learners who are involved in self-education. While scanning through the literature of distance education, it is noticed that the role of libraries in distance education is seldom discussed. This paper discusses the present scenario of library services provided to distance learners in India and abroad, categorises the

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Deputy Librarian, Indira Gandhi National Open University Library, C-4/17, Safdarjung Development Area, New Delhi-110016.

needs of distance learners and suggests ways of optimal utilisation of existing libraries of various types viz. special, academic and public libraries.

Library policies of different distance teaching universities vary from zero provision of books to full library services. In India, there are more than thirty-two universities offering correspondence courses since 1962, but their library services to external students are negligible whereas the Library of University of South Africa promotes distance teaching by way of providing a full library service. University of Manitoba in Canada, University of New England in New South Wales-Australia, Deakin University in Victoria-Australia, University of the South Pacific in Suva, Fiji etc. offer regular and correspondence (distance education) courses and give a high priority to the provision of library services to both their on-campus and off-campus students. They have the same system of Central Library and Study Centres libraries as we have in Indian open universities, but their library services are much more functional because they lend books through postal/courier services and provide xerox copies of journal articles from the Central Library without any additional charges. In Thailand, students of the Sukhothai Thammathirat Open University and in U.K., the British Open University students do not have libraries at their study centres. They usually avail of library services at the nearby public libraries. The Public Libraries system is well organised in these countries and they have attained great popularity by promoting distance education and by providing library and information services to adult learners.

Network of Open Universities in India

In India, Indira Gandhi National Open University (IGNOU) and Andhra Pradesh Open University (APOU) have a network of libraries comprising two distinct categories of libraries.

(a) Central Library as the apex at the University headquarters, and

(b) The Regional and Study Centres Libraries as the branch libraries.

The process of selection and acquisition, the collection and its organisation, and clientele vary a great deal from each other.

The Central Library and Documentation Centre combines the features of academic as well as special libraries. The selection of library materials is the joint responsibility of the librarian and the academic staff. Books, journals, non-print materials such as films, audio-video cassettes, slides, microfilms, microfiches, maps, charts, globe, models and pictures are acquired to facilitate the production of course materials for print and non-print media. The Central Library caters to the needs of academic and administrative staff at the university headquarters. The editors, writers, education technologists and experts selected to work on part-time or full-time basis for the preparation of the course materials are also entitled to use the Central Library resources.

In order to have consistency and standardisation, the process of acquisition and organisation are centralised at the Central Library. This will help in future when the library house-keeping operations are computerised. Multiple copies of the books are acquired for the Regional and Study Centres' Libraries. These books are selected by the academic staff of the various disciplines keeping in mind the availability and readability of the books. They are selected according to the course requirements and standards of the students. As far as possible, books recommended by the course writers under "Further Readings" at the end of each unit or block are acquired for Regional and Study Centres' Libraries. The books are processed i.e. accessioned, classified and catalogued at the Central Library, before they are sent to the respective Regional/Study Centres' Libraries. The students, the part time counsellors appointed to impart guidance to the learners in each subject, the coordinator and his supporting staff are the expected users of these library services.

Problems Encountered in Providing Library Services

The specially designed self-instruction material provided to distance learners is not self-contained. Students depend on some additional textbooks, reference books and journals. The Regional and Study Centres' Libraries cannot cater to masses of independent learners due to several constraints such as space, staff, budget, etc.

As the Regional and Study Centres are housed in existing colleges and educational institutions, accommodation available for library stockroom and readingroom is limited. Owing to lack of qualified and experienced staff, proper user-services are not provided. Circulation of books, including issuing, adjustments of loans, reservation of books, etc., is not possible (as students' attendance at counselling and contact sessions is optional). So the books are kept only for reference at the Centre's library to prevent losses and to ensure the availability of books at the premises for visiting students. The students residing in rural and remote geographical areas cannot make use of the library at the study centre. Budgetary constraints are still graver. It is impossible for the distance teaching universities to equip the Regional and Study Centres' Libraries with sufficient number of books and journals in various subjects for the masses of students enrolled in several courses. If one attempts to do so, the financial burden will increase and distance education courses will become costly for the learners.

Before going into the details of how to provide library services to distance learners, let us look into their requirements.

Requirements of the Distance Learners

The requirements of the distance learners can be grouped under three categories : (a) Need for materials and facilities, (b) Need for information services, and (c) Need for user services.

(a) *Need for Materials and Facilities*

Distance learners require access to library resources either for reference on premises or borrowing them for study at home or getting them on inter-library loan through the library. They need the following materials and facilities :

* Reference and textbooks.
* Self-instructional materials and open packages developed by various distance teaching universities.
* Audio-visual and non-print materials from various organisations.
* Audio-video equipment and hardware, Word Processor or typewriter, photocopier/xerox machine, microfiche reader-cum-printer, computer, etc.
* Lecture or discussion room for the independent learners to meet and to hear/view audio-video programmes.

(b) *Need for Information Services*

If the distance learners are provided access to well-organised resources and facilities, there should be well trained library staff to collect and receive information and make them available to the users as and when they are needed. Even if the materials are not available at the library, the staff should be able to provide up-to-date information on the following aspects :

* Bibliographical information of reference sources, books, journals and other non-print materials available in the library.
* Bibliographical details of materials available in other libraries which can be borrowed on inter-library loan.
* Information regarding various self-instructional or open learning packages of several open universities in India and abroad.
* Information regarding audio-visual and multimedia materials and their availability.
* Information regarding educational programmes of radio broadcasts, television telecasts and related materials.
* Information regarding the organisations imparting education and training opportunities through distance teaching and their various courses.
* Information regarding Regional and Study Centres of various organisations, timing of contact and counselling programmes, summer schools, laboratory workshops, special lectures, available resources and facilities, etc.

(c) *Need for User Services*

Adult, independent learners also need professional guidance and support from the library staff about :

* Using the library collection.
* Using the available equipment and facilities at the library.
* Selecting the reading materials.
* Planning their learning.
* Utilising the study skills for self-learning.

In order to fulfil these requirements, library staff should be willing to promote user education and information literacy. Librarian should arrange a lecture or present a self-instructional video show regarding the collection, its use and function, available equipment and facilities of the library. It should publicise its holdings and services at the library.

In order to ensure the effective use of the library, they should provide printed information, library guides to the collection, posters, display of new additions, notices, rules and regulations, instructions, etc. They may arrange illustrated talks by the subject specialists to assist the distance learners in pursuing their studies.

Library Services to Distance Learners Through Already Existing Libraries

Taking into consideration the requirements of the distance learners, it is felt that the joint efforts of all the existing libraries in India can adequately serve their need by utilising the already available resources without imposing additional financial burden. Libraries are always concerned about meeting the demands of their users. In India, more than thirty-two universities are conducting Correspondence Courses and with the establishment of the national and state open universities, the number of user communities consisting of mature distance learners is increasing enormously. Again, their requirements are diverse. Therefore, all types of libraries viz. academic, special and public, should focus their attention on meeting the library and information needs of independent adult students.

As far as *academic libraries* are concerned, most of the school and college libraries in India exist only in name. But there are a few well organised libraries at junior and degree colleges. These libraries can play a supportive role in extending membership to distance learners by allowing them to make use of the library resources at the premises at least in the evenings and on holidays. The same can be true of some well-equipped libraries of higher secondary, Central and Navodaya Schools. These school and college libraries can provide library services to the distance learners of the undergraduate courses.

The university libraries in India have very well developed and organised collections as a result of the substantial grants received from the University Grants Commission (UGC). Even then, those thirty-two universities which are conducting correspondence courses give step-motherly treatment to their off-campus external learners compared to their on-campus regular counterparts. There is no library support provided to external students whereas the regular students have full access to the university library resources. Again, university libraries are limited in number and are situated only in the big cities. So, they can cater only to the small percentage of urban students but cannot serve motivated learners residing in rural and remote areas. Universities should have a reading room attached to the University main library exclusively for external students and should establish branch libraries in the remote places considering the strength of students. Multiple copies of the useful textbooks, should be supplied to these libraries and copies of the journal articles useful for the syllabus should be sent after fulfilling the formality of copyright permission. Now that the UGC has chalked out an ambitious project of Rs. 200 crore to establish a network of university libraries in India, it will benefit the faculty members, research scholars and postgraduate students to avail of the resources of other libraries by exchanging books, journals and non-print materials on inter-library loan. It is hoped that in the long run, these facilities will be extended to the distance learners offering postgraduate and professional courses.

The *special libraries* having specialised collection of advance level in one or two disciplines are not immediately useful for all the students of liberal arts and undergraduate courses. But, their valuable collection can be useful to the independent students of postgraduate and professional courses. Hence, open universities should establish inter-library loan arrangement with the university as well as special libraries so as to borrow the books required by their postgraduate and research scholars and academic staff engaged in the preparation of course materials.

The concept of public library as traditionally understood in India is to provide library services to the adults for education and recreation. As the existence and development of *public libraries* depend upon the library cess paid by the public as part of their property tax, it becomes obligatory for the libraries to serve all the citizens including independent adult learners. In fact, this is not something new and special. As mentioned before, the distance learners of the U.K. Open University and the Sukhothai Thammathirat Open University of Thailand mainly get library support from the well established public library system.

In India, there is a great scope for the development of public libraries by enrolling distance learners of correspondence course and open universities as their members. At peresent, there are only six states viz. Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, West Bengal and Manipur where library legislation is in operation. It is necessary to enact library legislation to create a functional library system in all the States and Union Territories so as to enable them to play a key role in supporting distance education in India. It is evident that only public library system can reach every nook and corner of the country. The development of a network of public libraries in each state and establishing inter-state linkages to form a national network of public libraries will serve the potential group of distance learners of all levels such as undergraduate, postgraduate and research. Public libraries can provide mobile library services to serve independent learners in rural and remote areas. But, in order to fulfil such a huge task, public libraries should have suitable infrastructural facilities such as—adequate space, professionally-trained, experienced and motivated staff, organised user-oriented collection, etc. This will be possible only if the central and state governments provide adequate grants and all the non-formal, distance teaching organisations contribute their publications liberally. They should also provide up-to-date information from time to time to keep the staff of the public libraries well-informed and enable them to disseminate the correct information when required.

Responsibilities of the Libraries of Distance Teaching Universities

No doubt, public libraries have to play an important role in supporting distance learners and special and academic libraries can extend their cooperation for the cause of distance education, but the major responsibilities lie with the libraries of the various open universities to make this mission fruitful. If the distance teaching universities accept the enrolment of distance learners, it becomes obligatory on their part to provide student support services including library services to its students. In order to provide effective library services, the Central Library should have a separate cell headed at least by an Assistant Librarian to fulfil the library and information needs of distance learners. Library staff should be involved at all levels of course development—i.e. from curriculum planning to students' admission. After deciding the syllabus, a comprehensive bibliography of books and journal articles should be compiled. As far as possible, librarian should try to acquire them by purchasing or through inter-library loan from the other libraries. All this literature should be properly scanned and a short core list per each block of the course be prepared. This list should be sent to the students well in advance and multiple copies of the textbooks and journal articles should be made available at all the study centres. The lists for different courses should be passed on to the public libraries for adding them in their collections. But, one must avoid making a big list and over burden the learner. As independent adult learners, they have many responsibilities apart from the studies—viz. their own social life, family and job. The academics should make the self-instruction packages self-contained.

Selection and acquisition policies should be formulated on the basis of various factors such as the number of study centres, students, titles and multiple copies required. Only then the library can arrive at a realistic budget for the provision of library and information services to distance learners.

Lastly, Central Library should have adequate number of trained and experienced staff to take up these responsibilities. They should be well-informed about all the developments i.e. the number of new courses to be started, new study centres added, books, audio-video cassettes, equipment and libraries. This information should be regularly up-dated and sent to the network libraries as well as the public libraries. Automatisation of library operations and computer network can smoothen the functioning of the whole process.

Conclusion

To conclude, it is high time for the practical librarians to make policy decisions regarding the effective use of existing resources at different types of libraries and to satisfy the need of distance learners. They may have to compromise between the conflicting values. For instance, the librarian of a special library may primarily serve the needs of his own clients but should also make the resources available to serious, adult students by making appropriate arrangements for safeguarding the collection. The academic librarian may face a conflict between serving the needs of his/her own academic staff and full-time, on-campus students and those of off-campus distance learners. The public librarian may face problems in serving the needs of the general public as well as the potential group of adult learners. But they have to make positive attempts to serve the motivated mature learners and help them study independently. No doubt, this may seem to be difficult in this era of financial constraints but it is not impossible. It presents a challenge to the librarians to attempt change in their traditional attitude and aim towards the educational role of public libraries and the public role of academic libraries. This shift in overall outlook will surely help the librarians to make it possible for the distance learners to utilise the library and information services of all the existing libraries.

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Students' Attitude Towards Depoliticization of Education

(Continued from page 7)

3. Student participation in politics has increased the general indiscipline in the campus.

Merits of Depoliticization

1. Depoliticization will stop students unions from becoming bargaining agents like labour unions.
2. Depoliticization will help the students to become less frustrated towards the present social set-up.

Demerits of Depoliticization

1. In the process of depoliticization we will loose potential leaders of the country.
2. A student taking part in active campus politics equips himself for responsibilities in later life, depoliticization will lead to irresponsibility.
3. Depoliticization will stop the growth of political competence among the students.

Conclusion

On the basis of above findings the investigators have drawn the following conclusions :

1. The attitude of male students towards depoliticization is positive whereas the attitude of female students is neutral towards it.
2. There is a significant difference in the attitude of male and female students towards depoliticization of education. Thus the null hypothesis is being rejected.

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CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be Contacted
December 4-7, 1989	International Conference of Engineering Software	To deliberate on the recent advances in the software development and associated computational methods for specific engineering applications	Indian Institute of Technology, Delhi	Prof. C.V. Ramakrishnan, Head, Deptt. of App. Mech. IIT, Delhi, Hauz Khas, New Delhi-110016
December 13-15, 1989	13th National Systems Conference—1989	To bring out the various systems methodologies as applied to Engineering, Industrial Economics, and social problems.	Department of Electrical Engineering, IIT, Kharagpur	Prof. M.K. Ghosh, Department of Electrical Engineering, Indian Institute of Technology, Kharagpur-721302
December 30-31, 1989	9th State level Academic Conference of Maharashtra Federation of College Library Associations	To discuss the theme "Modern Trends in Library and Readers"	Maharashtra Federation of College Library Associations, Akola	Mrs. Nirmal Hulbe, Librarian & Convener Ahmednagar College, Ahmednagar.
January 3-5, 1990	National Conference on Stochastic Models in Management Science	To appraise the current research on applied stochastic process, use of stochtastic models and their applications in management science.	Indian Institute of Management, Ahmedabad	Dr. N. Ravichandran, Professor, Indian Institute of Management, Ahmedabad-380015.
January 23-25, 1990	Seminar on Woman and Work	To discuss (a) perspectives on women's work and status, (b) women in unorganized and organized sectors, (c) specific issues concerning Scheduled Castes/Tribes Women workers; and role of women's organizations.	Centre for Social Studies, South Gujrat University Campus, SURAT	Dr. Paramjit Singh, Centre for Social Studies, South Gujrat University Campus, SURAT-395-007
April 7-9, 1990	Second Biennial Conference of the Allahabad Mathematical Society.	To promote research in Mathematics, Mathematical Physics and Statistics.	Allahabad Mathematical Society, Allahabad	Professor (Mrs.) P. Srivastava 10, C.S.P. Singh Marg Allahabad

Women in Rural Development

The Women's Studies Cell of the S.D. College, Muzaffarnagar, recently organised a seminar on the Role of Women in Rural Development under the auspices of the University Grants Commission. The seminar focussed on the conceptual analysis of rural development; Women's role in rural development—its extent and limitations; Review of programmes of women's role in rural development; Contribution of voluntary organisations in promoting women's role in rural development; Suggestions/views on participation of women in rural development; and Models of women's participation in rural development.

Speaking on the concept of rural development, Dr. L.N. Mittal, Principal of the College, said that rural development included principles, strategies and programmes for making advancement of rural life through infrastructural, financial and institutional aids; development and employment of rural human resources and rational use of physical resources with the objective of material betterment of the quality life in rural areas. He observed that development in general should include both qualitative and quantitative change encompassing all aspects of a society. Miss Renu Kamboj argued that since development is primarily the outcome of the ingenuity of the people, half of the development ventures fail to take off if women do not have a role to play in the development process. Pointing out the significance of rural development in Indian context, she held that women have important role to play both inside and outside the home. She felt that since women constitute half of the human resource of a society, they should be provided with active roles of participation in the process of rural developmet.

Women's Role—Extent and Limitations

Dr. M.K. Gupta demonstrated that women's role in home operations was still predominent. The other areas where women had significant roles included animal husbandry, agriculture, education and decision making. Mr. Satyendar Misra saw women's role in increasing food production and in poverty alleviation programmes. He opined that women could contribute especially in the sphere of education as an educated woman can educate the whole family and in the sphere of health and family welfare. Mrs. Shashi Mittal found women's role significant in agricultural development by way of their contribution in technology development and transfer and by participating in agricultural input delivery system. Mr. S.C. Dua emphasised women's role in promoting national literacy mission. Mr. U.B. Singh pointed out the significance of literacy in development process and with the case study of Budhana Tehsil in Muzaffarnagar district, he concluded that mere provision of educational infrastructure may not necessarily lead to higher literacy until there was a change of attitude of people towards literacy. He also emphasised women's role in literacy. Dr. S.C. Varshney advocated development of entrepreneurship among women. They can play important role in reducing unemployment by developing entrepreneurship, he said.

Review of Programmes

One of the interesting fact about the programme of women's role in rural development implicitly or explicitly, is their multiplicity. Dr. L.N. Mittal took stock of such programmes including target group programmes like TRYSEM, area development programme like TADP and women specific programme like STEP. Miss Renu Kamboj made a review of women-specific spirit of all such programmes. She traced significant change in this approach during fifth plan when more emphasis was laid on women's education and training for their gainful employment. According to her, it was only in the sixth plan that a shift was perceived from welfare to development approach for the first time. She found about 27 schemes and programmes in operation for women's role in rural development. Besides a separate department of women and child development has been created in 1985 for strengthening women's participation in rural development.

Role of Voluntary Organisations

Voluntary organisations play important role in all development programmes. Mr. R.K. Dokwal, giving the example of Mahila Grih Udyog, Sahakari Samiti and Kaira District Milk Producers Union held that voluntary organisations can successfully lead women to active participation in rural development. Dr. B.S. Yadav proposed to involve NSS Volunteers in such programmes related to rural development as health and nutrition, child development, education, environmental management and social forestry.

Suggestions

Target group programmes like TRYSEM, area development programme like TADP and women specific programme like STEP were suggested. Also suggested was shifting female labour from traditional agricultural sector to non-agricultural sector providing necessary infrastructure to bring about such shift. Emphasis was laid on the need of identifying ways and means to reduce unemployment, measures to alleviate poverty and inequality and provision of work opportunities so that women work participation could go up. Identification of such schemes as would generate more jobs, schemes of village and cottage industries, provision of infrastructure and schemes that are helpful in raising agricultural productivity were also suggested. Other suggestions made at the seminar related to improvement of technology for coping with domestic chores to avoid drudgery, access of women to new technology, encouraging women in dairying, access to knowledge and information and adequate health care in order to achieve female work participation.

Models of Women's Participation in Rural Development

The central operational problem is to achieve a breakthrough in the positive participation by women in gainful work. This needs modification of already existing models as referred to by Dr. L.N. Mittal in such a way as to accommodate women's participation in development process. Professor R.L. Goel held the view that Gandhian model was the best frame wherein requirement of Indian female work participation could be explored. Mr. S.C. Kulshrestha and Dr. D.S. Rawat proposed an operational model that would help in finding a breakthrough in women's work participation. Assuming two essential kinds of work of women within home and outside it, the model provides inputs to improve her efficiency at home to spare time to give more time outside the home. Besides, input, improving her quality as human resource are also provided. At this stage, the model suggests employment of women in public sector, small scale industrial units and also simultaneously in units of co-operative sector. Capital formation should generate entrepreneurship in them and should lead to their self employment.

Computerised Cataloguing System

The Indira Gandhi Memorial Library of the University of Hyderabad has started producing its catalogue cards using PC-AT acquired by the library recently. A single input of bibliographic data produces all the required catalogue cards and brings out the Monthly Additions List along with contents page and subject index.

This data is also searchable by author, keyword, accession number, classification number etc., and browsable from a given classification number. The programmes are operational since May 1989 and continuous card stationary has been procured for the production of catalog cards. These programmes have improved the accuracy and efficiency of the technical processing section. It is now possible to clear cataloguing backlogs and send publications faster to the stacks.

Essay Competition on Cooperation

To orientate students and youth in the ideology, philosophy and principal of cooperation, the National Council for Cooperative Training, organises Essay Competition on Cooperation for university students. As in earlier years the council has requested the university authorities to conduct these competitions.

The competition is open to postgraduate and undergraduate students of the university and its affiliated and constituent colleges. The participants shall write an essay of about 3000 words on the topic prescribed by the university. Essays received for the competition shall be evaluated by a panel of three judges to be nominated by the university authorities. Three prizes of the value of Rs. 150/-, Rs. 100/- and Rs. 75/- are awarded to the 1st, 2nd and 3rd best entries respectively.

Interested participants may contact the Registrars/Principals of their respective Universities/Colleges for further details of the scheme.

Medical Scholarship Directory

To help dissemination of information regarding scholarships and to see that no amount intended for scholarships is left unutilised and also that no student is denied opportunities, the Andhra Pradesh University of Health Sciences has brought out a Directory of Scholarships "GATES OPEN TO MEDICOS" for use in the Medical Colleges of Andhra Pradesh. The Directory contains information on various Scholarships, Fellowships, Financial Assistance, Economic Benefits, Educational Loans, Research Grants, Travel Grants, etc. available to Medical Students in India and abroad.

National Conf. on Stochastic Model in Mgt. Sc.

The Indian Institute of Management, Ahmedabad, in collaboration with several academic institutions, professional societies and industrial units, will organise a National Conference on Stochastic models in Management Science from Jan. 3-5, 1990. The objectives of the conference are (i) to bring together various researchers in different management and related institutions to discuss and review the current research on applied stochastic process; (ii) to promote research and influence practices in the area of stochastic modelling; (iii) to establish a network of researchers to coordinate and plan future programmes and activities; and (iv) to appreciate the importance and use of stochastic model and their applications, in management science.

Intended for active researchers in the area of Applied Probability, Stochastic Processes, Management Science and Operations Research, the practising managers with potential to use stochastic models in their day to day management would benefit from the seminar.

Further details with regard to participation and presentation of papers may be had from Dr. N. Ravichandran, Professor, Indian Institute of Management Ahmedabad-380015.

Nehru's Perception on Women

The Department of Historical Studies, Mother Teresa Women's University organised a two day seminar on "Pandit Jawaharlal Nehru's Perception on Women" on 24th and 25th October 1989.

Dr. A. Suryakumari, Senior Fellow in Historical Studies, while welcoming the chief guests Shri C. Subramaniam, Former Union Finance Minister and Dr. Sadasivam, Emeritus Professor, Madras University, outlined Pandit Jawaharlal Nehru's perception on women. Hon'ble Shri C. Subramaniam in his presidential address shared his personal experience with Jawaharlal Nehru. He illustrated with examples Nehru's penchant for punctuality and promptness. Dr. Sadasivam, in his special address, dwelt on Nehru's scientific temper.

Dr. S. Jeyaprakash, Professor and Head, Dept. of Gandhian Studies and Ramalinga Philosophy, Madurai Kamaraj University, brought to light the rare information relating to religious aspects of women and Pandit Jawaharlal Nehru's perception. He traced the Mother Goddess worship from the pre-historic times and discussed matriarchy, patriarchy and equally linking them with religion, women and Nehru. To him Jawaharlal Nehru's religion was unparalleled secularism. Dr. S. Vijayalakshmi, Director of the Centre for Social Research, Madras in her paper on "Jawaharlal Nehru's perception on Women" emphasised Nehru's concept of an Indian woman as radically different from the then prevailing or traditional concept of women in India. She examined Nehru's critical attitude towards women's education that prepared girls for household work and how he desired the best of education for women in every department of human activity as he did not believe in keeping women in subordination or isolation. She also examined the differences between Nehru's and Gandhiji's perception on women.

Dr. Devadatta, Professor and Head, Department of Tamil in her persentation on 'Pandit Nehru's letters to His Daughter' analysed the relevance of Nehru's letters to the present generation highlighting the significance of history. Ms. P.N. Premalatha of the Department of Historical Studies in her paper on 'An Analysis of Jawaharlal Nehru's perception on Women' focussed on the contribution of Nehru to the development of Indian Women, first as freedom fighter and then as the Prime Minister of independent India. Ms. P.V. Manoranjitham's paper on "Woman As a Right Citizen of India : Pandit Jawaharlal Nehru's Perception" elaborated how Pandit Nehru visualised Indian women as a citizen and helped to raise her inferior position through various legislations and as the leader of the Nation. Ms. G.L.A. Satya Rani, in her paper on 'Pandit Jawaharlal Nehru's perception of Kamala Nehru' emphasized the relations of Jawaharlal and Kamala Nehru and how the evolution of Pandit Jawaharlal Nehru's perception of Kamala took place from the time of their marriage till her untimely death in the background of the national movement. This understanding of his relationship with Kamala reveals the positive perception of Nehru on women.

Dr. (Mrs). Jaya Kothai Pillai, Vice-Chancellor, Mother Teresa Women's University charied the valedictory session while Shri S. Pandian, Secretary, Gandhi Memorial Museum, Madurai delivered the valedictory address. In his address, Shri Pandian elaborated on the relations of Gandhi with Nehru and Nehru's contribution to the development of India.

Academy of Allergy

The Department of Botany, Bangalore University, has set up the Indian Academy of Allergy. According to the university sources, the membership to the Academy is open to those interested.

The Bangalore University recently announced that the UGC-funded research project on the giant honeybee (Apis dersata F) was nearing completion. Since the giant bees were superior to the domesticated variety, the study by Dr. C. Chandrashekara Reddy would provide vital information for the successful domestication of the wild honeybee.

News from Agril. Varsities

Training in Agricultural Marketing Research

The Centre for Agriculture and Rural Development Studies (CARDS) of Tamil Nadu Agricultural University recently organised a six-day training programme on Agricultural Marketing Research. In his introductory remarks, Dr. A. Kandasamy, Director (CARDS) explained in detail the need for refresher training in Agricultural Marketing. Citing the agricultural scenario which is on the cross roads, he said that the farming community is to be regularly apprised of the marketing structure and facilities to enable them to get remunerative prices for its commodities. Stressing the psychological make up of the farming community, he called upon the academicians of agricultural marketing research to tailor the research strategies that would directly answer the challenges and bottlenecks of the marketing structure and functions. "Farmer is the ultimate producer of our commodity" he emphasised while explaining the need for identifying the market problem in order to make the market strategy most effective.

Mr. V.V. Soundararajan, Special Officer, Coimbatore Market Committee, who presided over the inaugural function, outlined the multidimensional network of agricultural marketing in our country and called upon the participants to have healthy interaction with the research faculty for understanding the challenges in right perspective. In his opinion, the trainees were to be apprised of the latest extension methods and techniques to discharge their duties as effective agricultural marketing officers at the field level.

Dr. N. Shanmugam, Director of Extension Education, who delivered the inaugural address, appreciated the role of agricultural marketing in the development of agricultural sector. He stressed the need for periodic training for updating the knowledge and sharing the field experiences in the concerned area. In his opinion, the "panel discussion" type of small group technique was of great use in such training sessions.

Training on Dairying

A five-day training on milk production and dairying, jointly organised by the Union Ministry of Human Resource Development and Krishi Vigyan Kendra of Tamil Nadu Agricultural University (TNAU) was inaugurated on October 23, 1989 by Dr. S. Jayaraj, Vice-Chancellor of TNAU. In his presidential address the Vice-Chancellor called for an integrated farming system approach to utilise the local resources in an efficient manner, which in turn would create more employment opportunities for the rural poor and more income.

Dr. Marimuthu, Regional Joint Director of Animal Husbandry explained about maintaining cattle wealth during drought conditions and different types of feed. Dr. N. Shanmugam, Director of Extension Education, informed that Union Ministry of Human Resource Development had sanctioned this year seven training programmes while Dr. R. Sundararajan, Professor and Head, Krishi Vigyan Kendra outlined the training programme.

TNAU Develops Seed Pelleting Equipment

Pelleting of seeds with pesticides, fungicides, macro and micro nutrients, has been practised for many cereal, vegetable and fruit seeds. This has been accomplished by hand mixing the seeds with any binder followed by pesticides, etc. This method lacks in uniform coating of the material around the seeds. To overcome this difficulty, a simple equipment has been developed at the Department of Agricultural Processing, College of Agricultural Engineering of the Tamil Nadu Agricultural University, for pelleting of seeds with pesticides, fungicides macro and micro nutrients. This machine consists of an Aluminium pot fixed at one end of the shaft. The shaft is held at an angle of 35° to the horizontal and rotates at 50 rpm by means of a ½ hp electric motor.

For pelleting by this machine, the seed is fed to the machine and measured quantity of binding material such as gum acacia or rice gruel is poured over the seeds slowly, so that the binder is dispersed all over the seeds. Then the required quantity of pesticides fungicides etc. mixed with wood ash in powder form is put on the seeds, which gets adhered to the seeds well. The unique rolling and cascading action of seeds obtained in this machine enable the uniform pelleting of seeds. The machine could be used for any seed material with different shapes and sizes.

For one kg of sorghum seeds to be pelletted, 50 ml of gum acacia is used as binder and about 100 g of coating material is required. This binder can also be replaced with 100 ml of rice gruel.

The cost of the equipment is Rs. 2000/- with the electric motor. The capacity of the equipment is 2 kg per batch and 200 kg per day. The cost of operation is Rs. 3.00 per quintal on seeds.

News from UGC

Nuclear Science Centre

A 15 million volt accelerator is being installed at the Nuclear Science Centre, New Delhi, an Inter-University Centre of the University Grants Commission, for accelerator based research in various science disciplines. The beams are likely to be available for experiments by the end of next year. Scientists from various universities and other institutions are working together to set up experimental facilities for their research at the Centre.

Prayag Sangit Samiti Restrained

The University Grants Commission (UGC) has asked the Prayag Sangit Samiti, Allahabad not to award degrees to students because it is not a statutory University. Under the UGC Act, 1956, the right of conferring or granting degrees can be exercised only by a statutory University established under a Central Act or a State Act or an institution deemed to be a University or an institution specially empowered by a State/Central Act to confer or grant degrees.

Swami Pranavananda Awards

The University Grants Commission (UGC) has selected three distinguished scholars for the prestigious Swami Pranavananda Awards for the year 1988 for their outstanding scholarly/scientific contributions to human knowledge. The recipients are Prof. Sukhmy Chakravorty, Delhi School of Economics, University of Delhi, (Economics), Prof. T.K.N. Unnithan, former Vice-Chancellor, Rajasthan University, Jaipur (Sociology), and Prof. P.S. Ramakrishnan, Director, Govind Ballabh Pant Himalayan Paryavaran Evam Vikas Sansthan, Kashi, Almora, U.P., (Environmental Science and Ecology).

The Award carries a citation and cash award of Rs. 10,000/- to each awardee.

News from Abroad

University of The World

The San Francisco-based University of The World has decided to set up its branch in Bombay, primarily for students who fail to secure admissions in colleges for want of seats. This was announced at a recently concluded first global conference on learning at Arbor, Michigan, organised jointly by the University of The World, U.N. University and United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Bombay's Urban Institute Director, Dr. Rashmi Mayur, who has been appointed chairman of the Bombay project of the University of The World, said that he would try to put in place the administrative infrastructure of the branch in an year's time. Dr. Mayur said he would also get in touch with the Indira Gandhi National Open University in New Delhi to work out an arrangement for cooperation between the two institutions.

According to a UNESCO report, every year about 40 per cent of the students in the third world fail to secure seats in colleges because of overcrowding. The University of The World branch, which would adopt a non-formal pattern of education, would help them pursue higher education.

At present the University has branches in 16 countries.

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Dr. Yashwant Singh Parmar University of Horticulture and Forestry

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ADMISSION NOTICE

Applications (in-duplicate) are invited upto **11-12-1989** for admission to **Doctoral Programme** in the disciplines shown as under against each College for the Academic Session 1989-90 (Second Semester) commencing from **23-12-1989**. The eligible candidates must bring all the original certificates and present themselves for interview on the date noted below against each college.

Disciplines	Date of Interview	Minimum Qualifications
I. COLLEGE OF HORTICULTURE NAUNI (SOLAN) 1. Fruit Culture & Orchard Management 2. Post-harvest Technology 3. Vegetable Crops 4. Entomology & Apiculture 5. Mycology & Plant Pathology	14-12-1989 (11.00 AM)	M.Sc. in concerned discipline from a recognised University. In the case of Forestry, M.Sc. Science with AIFC/SFS 2-year diploma course will also be eligible. Provided that the candidate must have secured an OGPA 7.00/10.00 (3.20/4.00) or its equivalent under course credit system or atleast 65% marks in annual system of examination. OR Degree of a foreign University with atleast 'B' grade or its equivalent recognised by the Academic Council.
II. COLLEGE OF FORESTRY NAUNI (SOLAN) 1. Forest Biology & Tree Improvement 2. Silviculture & Agroforestry 3. Forest Products & Utilization	15-12-1989 (11.00 AM)	

RESERVATION FOR SCHEDULED CASTE/SCHEDULED TRIBE CANDIDATES

22½% of the total seats (except 10% seats reserved for ICAR nominees) shall be reserved for the candidates belonging to Scheduled Caste (15%) and Scheduled Tribe (7½%).

GENERAL

(i) The inservice candidate must apply through proper channel by specified date with specific letter of sponsorship.

(ii) NO SEPARATE INTERVIEW LETTERS WILL BE ISSUED.

(iii) No TA etc. will be admissible for attending interview. The ineligible candidate(s) need not come for interview.

(iv) Prospectus-cum-admission form is obtainable from the office of the undersigned on payment of Rs. 10.00 in cash at the counter or by sending crossed Indian Postal Order worth Rs. 15.00 payable to the Comptroller, Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Solan.
NO MONEY ORDER WILL BE ACCEPTED FOR THIS PURPOSE.

(v) List of selected candidates as well as the candidates placed on waiting list for disciplines of both the Colleges will be displayed by **16-12-1989**.

B.S. Nainta
REGISTRAR

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

- The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A list of Research Scholars Registered for Doctoral Degrees of Indian Universities

PHYSICAL SCIENCES

Physics

1. Awana, Veer Pal Singh. *Synthesis and characterization of high temperature superconducting materials.* Delhi. Prof. G.C. Trigunayat, Department of Physics, University of Delhi, Delhi and Dr. A.V. Narlikar, National Physical Laboratory, New Delhi.

2. Batra, Sangeeta. *Deterministic chaos.* Delhi. Dr. V.S. Verma, Department of Physics, University of Delhi, Delhi.

3. Bhat, Gururaj. *Solar terrestrial energy programme.* Delhi. Dr. C.S.G.K. Setty and Dr. Narender Nath, Department of Physics, University of Delhi, Delhi.

4. Gupta, A.K. *Temperature dependence of parameter fabricating a solar cell.* Delhi. Dr. Feroz Ahmed, Department of Physics, University of Delhi, Delhi.

5. Jain, Pawan Kumar. *Development and characterisation of carbon/carbon composites.* Delhi. Dr. N.K. Nayyar and Dr. O.P. Behl, Department of Physics, University of Delhi, Delhi.

6. Jayaswal, Sudesh Kumar. *Investigation on fluorescence characterisation of organic molecules.* Delhi. Prof. M.K. Machwa, Department of Physics, University of Delhi, Delhi.

7. Jyotish Kumar. *Spectroscopic study of some organic materials.* Delhi. Prof. M.K. Machwe, Department of Physics, University of Delhi, Delhi.

8. Kansal, Manish Kumar. *Molecular dynamics of phase transition in solid methane.* Delhi. Dr. Sudhir K. Trikha, Department of Physics, University of Delhi, Delhi.

9. Karlo, Tado. *Group representation.* Delhi. Prof. K.C. Tripathi, Department of Physics, University of Delhi, Delhi.

10. Katoch, Sunil Kumar. *Factor and life-time measurements of high spin nuclear states.* Delhi. Prof. S.L. Gupta, Department of Physics, University of Delhi, Delhi.

11. Lamba, Sushil. *Parity-violating anomalies and their application to the quantised Hall effect.* Delhi. Dr. S.R. Choudhury, Department of Physics, University of Delhi, Delhi and Dr. S.K. Soni, Shri Guru Teg Bahadur Khalsa College, University of Delhi, Delhi.

12. Lehri, Deepti. *Solar cells.* Delhi. Dr. Feroz Ahmed, Department of Physics, University of Delhi, Delhi and Dr. Rajesh Mohan, Atma Ram Sanatan Dharam College, Dhaula Kuan, New Delhi.

13. Majumdar, Archan S. *Superstring compactification in strong gravitational fields.* Delhi. Dr. R.P. Saxena, Department of Physics, University of Delhi, Delhi.

14. Malik, Sanjay. *Nuclear properties at high angular momenta.* Delhi. Dr. S C. Pancholi, Department of Physics, University of Delhi, Delhi.

15. Manoj Kumar. *Atmospheric studies by microwave radiometer.* Delhi. Dr. Narender Nath, Department of Physics, University of Delhi and Dr. G.S. Uppal, National Physical Laboratory, New Delhi.

16. Moitra, Debotosh. *Molecular dynamics of phase*

transition in solids. Delhi. Dr. Sudhir K. Trikha, Department of Physics, University of Delhi, Delhi.

17. Narula, Puneet. *Sepetroscopic studies in macromolecular assemblies of biomedical instrumentation.* Delhi. Dr. M.M. Bajaj, Department of Physics, University of Delhi, Delhi.

18. Pankaj, Kamal Singh. *A study of optical properties of fibres used in textile industry.* Devi Ahilya. Dr. A.L. Sharma, Reader, School of Physics, Devi Ahilya Vishwavidyalaya, Indore.

19. Sapra, Gulshan Kumar. *X-ray scattering 'Form factor' for atoms with anisotropic charge distribution.* Delhi. Prof. L.S. Kothari, and Dr. V.S. Bhasin, Department of Physics, University of Delhi, Delhi.

20. Sarkar, Bishwanath. *Experiments on low dimensional coulomb systems.* Delhi. Dr. G.K. Chadha, Department of Physics, University of Delhi, Delhi and Dr. Ravi Malhotra, National Physical Laboratory, New Delhi.

21. Sengupta, Sanjay. *Solar terrestrial physics.* Delhi. Prof. C.S.G.K. Setty and Dr. N. Nath, Department of Physics, University of Delhi, Delhi.

22. Setty, Arun Kumar. *High temperature superconductivity theory of phase transitions and critical phenomena.* Delhi. Prof. V.K. Singh, Department of Physics, University of Delhi, Delhi.

23. Sharat Kumar. *Laser, Raman EPR, EMO, FTIR, ESCA, X-ray fluorescence and other studies of macro molecules.* Delhi. Dr. M.M. Bajaj, Department of Physics, University of Delhi, Delhi.

24. Verma, Poonam. *Theories of super fluids and modern theory of phase transition.* Delhi. Prof. K.K. Singh, Department of Physics, University of Delhi, Delhi.

25. Verma, Vijay Kumar. *Experimental high energy physics.* Delhi. Dr. R.K. Shivpuri, Department of Physics, University of Delhi, Delhi.

Chemistry

1. Gurudutta, G.U. *Studies on the regulation of induction of cellular DNA damage and repair.* Delhi. Dr. Ramesh Chandra, Department of Chemistry, University of Delhi, Delhi.

2. Jha, Vinita. *Chemistry of medicinal plants.* BHU. Prof. A.B. Ray, Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

3. Mahmoud, Ayman Hussain Amin. *Corrosion chemistry and developing certain new inhibitors.* Delhi. Prof. N.R. Banerjee, Department of Chemistry, University of Delhi, Delhi.

4. Roy, Ruchira. *Chemical and pharmacological studies on some medharasayana plants.* BHU. Dr. V.B. Pandey, and Prof. S.K. Bhattacharya, Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

5. Sahu, Prasanta Kumar. *Polarographic studies of metal complexes.* Delhi. Prof. N.R. Banerjee, Department of Chemistry, University of Delhi, Delhi.

6. Saraswat, Vibhor. *DNA structure and immune levels in cancer in patients and experimental animals.* BHU. Dr. Y.B. Tripathi, and Dr. P.C. Mishra, Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

7. Sharma, Renu. *Chemistry of natural products.* BHU. Prof. A.B. Ray, Department of Medicinal Chemistry, Banaras Hindu University, Varanasi.

8. Shukla, Deepak. *Study of certain anti-cancer drugs with special reference to immune intracellular BH.* Dr. Y.B. Tripathi, Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

9. Thakur, Alka. *Biochemical properties of biologically active compounds.* Delhi. Dr. Ramesh Chandra, Department of Chemistry, University of Delhi, Delhi.

Earth Sciences

1. Jain, Praveen Kumar. *Deformation pattern along a segment of the Udaipur-Barwani Lineament : South Western part of the Sarana inlier, Southern Rajasthan.* HS Gour. Dr. P.P. Rode, Reader, Department of Geology and Applied Geology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

2. Jain, Shalesh Kumar. *Geology of the area around Mugwani, Narsinghpur District, N-M.P.* HS Gour. Prof. M.V. Durge, Reader, Department of Geology and Applied Geology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

3. Katptal, Yaswant Bhaskar. *On the deformation of the Barr conglomerate western flank of Delhi Orogen, Rajasthan, India.* HS Gour. Dr. P.P. Rode, Reader, Department of Geology and Applied Geology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

4. Tajinder Singh. *Distribution and behaviour of radio active minerals in granitoid body of Baihar-Plateau, Balaghat (M.P.)* HS Gour. Prof. M.V. Durge, Reader, Department of Biology and Applied Geology, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

Engineering & Technology

1. Arun Kumar. *Geotechnical engineering/rock mechanics.* BHU. Dr. K.K. Jain, Department of Technology, Banaras Hindu University, Varanasi.

2. Dinesh Kumar. *Some aspects of heat transfer in underground working.* BHU. Prof. J.C. Singh, Department of Mining Engineering, Banaras Hindu University, Varanasi.

3. Jagajeevan, V.K. *Structural aspects of metallic corrosion.* BHU. Prof. T.K.G. Namboodhiri, and Dr. C. Ramachandra, Department of Metallurgical Engineering, Institute, of Technology, Banaras Hindu University, Varanasi.

4. Jha, Keshav Kumar. *Effectiveness of cost control systems in public sector enterprises.* BHU. Dr. J.N. Dube, Department of Mechanical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

5. Mukherjee, P.K. *Study of microprocessor based system and its application in remote sensing.* BHU. Prof. Raghunath, and Prof K.P. Singh, Department of Electronics Engineering Institute of Technology, Banaras Hindu University, Varanasi.

6. Murthy, Daita Sreerama Chandra. *Studies on the salt roasting of sulphides.* BHU. Prof. S. Banerjee, Director, National Metallurgical Laboratory, Jamshedpur and Prof. P.M. Prasad, Department of Metallurgical Engineering, Banaras Hindu University, Varanasi.

7. Pour, Abdol Reza Sottani. *Correlation af fatique behaviour with microstructure of some engineering materials.* BHU. Prof. Vakil Singh, Department of Metallurgical Engineering, Banaras Hindu University. Varanasi.

8. Singh, Ashok Kumar. *Influence of coal characteristics on the workability of coal seams.* BHU. Prof. R. Nath, Department of Mining Engineering, Banaras Hindu University, Varanasi.

9. Singh, Chandra Shekhar. *Rock mechanics.* BHU. Dr. B.K. Srivastava, and Prof. B.B. Dhar, Department of Mining Engineering, Banaras Hindu University, Varanasi.

10. Singh, Rabindra Kumar. *Ground vibrations due to blasting.* BHU Prof. J.C. Singh, Department of Mining Engineering, Banaras Hindu University, Varanasi.

11. Srikant, Bijay Kumar. *B.E.M. based on solutions of problems in ground control.* BHU. Prof. J.C. Singh, Department of Mining Engineering, Banaras Hindu University, Varanasi.

12. Vijaya Singh. *Processing and characterisation of high strength aluminium alloys.* BHU. Dr. C.R. Chakravorty, DMRL, Hyderabad and Prof. S.N. Tiwari, Department of Metallurgical Engineering, Banaras Hindu University, Varanasi.

BIOLOGICAL SCIENCES

Anthropology

1. Bhargava, Deepti. *Demo-genetics : Survey.* Delhi. Dr. P. Seth, and Dr. S. Seth, Department of Anthropology, University of Delhi, Delhi.

2. Roy, Sunita. *Physical anthropology : Human growth and development.* Delhi. Dr. Surender Nath, Department of Anthropology, University of Delhi, Delhi.

Biology

1. Arun, L.K. *Niche segregation and habitat usage of fish assemblages in upper reaches of Kallar Vamanepuram River Basin.* Kerala. Dr. P. Natarajan, Prof., Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

2. Balasubramanian, N.K. *Population studies on Etroplus suratensis.* Kerala. Dr. P. Natarajan, Prof., Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

3. Mahajan, Indira. *Effect of water quality on phytoplankton dynamics and primary productivity of Renuka and Rewalsar lakes, Himachal Pradesh.* HP. Dr. R.S. Thakur, Department of Bio-Sciences, Himachal Pradesh University, Shimla.

4. Purushothaman, C.S. *Nutrients and bacterial kinetics in Veli lake.* Kerala. Dr. K. Dhevendran, Reader, Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

Biochemistry

1. Katyayani, Muni. *Role of human papilloma virus in cervical cancer.* BHU. Dr. G.R.K. Rao, Department of Biochemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

2. Sharma, Manjuli Rani. *Studies on lipoproteins in chronic glomesulas disease with special reference to dialytic therapy.* BHU. Prof. S.S. Dubey, Department of Biochemistry, Banaras Hindu University, Varanasi.

Botany

1. Ajithkumar, D. *Physiological investigations on tuberization in greater yams, Dioscorea alata and D. rotundata propagated through minisets.* Kerala. Dr. Mrs. P. Indiramma, Scientist S_3 Plant Physiology, Central Tuber Crops Research Institute, Sreekariyam, Trivandrum.

2. Rajeev, G. *Studies on the involvement of MLOs in yellow leaf disease of arecanut.* Kerala. Dr. J.J. Solomon, Scientist (SG) C.P.C.R.I. Regional Station, Kayamkulam and Dr. G.M. Nair, Reader, Department of Botany, University of Kerala, Karlavattom.

3. Sasikumar, N. *Some probability distributions and their applications in communication theory.* Kerala. Dr. C.G. Sukumaran Nair, Scientist, SE, Computer Division, V.S.S.C., Trivandrum.

4. Tyagi, Rishi Kumar. *Stress tolerance studies in tissue culture.* Delhi. Dr. N. S. Rangaswamy, Department of Botany, University of Delhi, Delhi.

5. Vara Prasad, Kolluri Venkata Satya. *Studies on red palm oil in relation to the development, processing and end uses.* Kerala. Dr. C. Arumughan, Scientist, Food Division, Regional Research Laboratory, Trivandrum.

6. Verma, Nawal Kishore. *Response of grassland ecosystem to coal-dust pollution.* Magadh. Dr. D.D. Pandey, Lecturer, Department of Botany, Magadh University, Magadh.

Zoology

1. Arora, Poonam. *Biological control of insects.* Delhi. Prof. S.S. Sehgal, Department of Zoology, University of Delhi, Delhi.

2. Kurane, M.M. *Effects of sex hormones on induced duodenal ulcers and Brunner's glands of mice.* Shivaji. Dr. (Smt.) N.M. Pillai, Department of Zoology, Shivaji University, Kolhapur.

3. Walia, Archana. *Limnological studies on river Yamuna, Delhi.* Delhi. Dr. Naresh Kumar Mehra, Department of Zoology, University of Delhi, Delhi.

Medical Sciences

1. Bhadury, Brahma Gopal. *Graha nakshtrya kiran ka manas prabhava evam chikitsa (Hindi).* BHU. Prof. R.H. Singh, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

2. Gupta, Alka. *Nutrition and child development.* BHU. Dr. S.K. Upadhyaya and Dr. D.K. Agrawal, Department of Paediatrics, Banaras Hindu University, Varanasi.

3. Jalan, Aradhana. *Study on protein and calorie requirements of malnourished under five in peri-urban villages of Varanasi.* BHU. Dr. S.C. Mohapatra, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

4. Kamavisdar, Sharad Shankar. *Fundamental aspects of chemistry related to Ayurveda.* BHU. Prof. J. Mitra, Department of Basic Principles, Banaras Hindu University, Varanasi.

5. Mishra, Ragini. *Study of dialyzability of some hormones through artificial membrane.* BHU. Dr. K.K. Tripathi, Department of Medicine, Banaras Hindu University, Varanasi.

6. Narasimha Rao, Prasanna. *Role of agnikarma in malignancy.* BHU. Prof. G.C. Prasad, Department of Shaly Shalakya, Banaras Hindu University, Varanasi.

7. Ojha, Prativa. *Nutrition in head, neck and breast cancers.* BHU. Dr. H.S. Shukla, Department of Surgery, Banaras Hindu University, Varanasi.

8. Pandey, Archana. *Ayurveda evam sanskrit vangmaya ka paripekshya : Shoyaksha brahman ka samikshatmak adhya-*

yana (Hindi). BHU. Dr. L.P. Gupta, Department of Basic Principles, Banaras Hindu University, Varanasi.

9. Sharma, D. Nanda Kumar. *Phytochemical end pharmacognostical studies on Indian medicinal plants.* BHU. Dr. R.L. Khosa, Department of Pharmaceutics, Banaras Hindu University, Varanasi.

10. Shool Chand. *Vatayayan kamasutra me nihit vajikaran samagri ka adhyayana (Hindi).* BHU. Prof. J. Mitra, Department of Basic Principles, Banaras Hindu University, Varanasi.

11. Singh, Anita. *Synthesis and biological activities of 1, 2, 4-dithiazolidines and related derivatives.* BHU. Dr. S.N. Pandeya, Department of Pharmaceutics, Banaras Hindu University, Varanasi.

12. Singh, Kiran. *A study of feeding and weaning pattern among under 5 years children.* BHU. Dr. R.R. Dwivedi, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

13. Tewari, Ram Mohan. *Chemical modifications of certain enzymes having clinical importance.* BHU. Dr. S.K. Patnaik, Department of Pharmaceutics, Banaras Hindu University, Varanasi.

14. Tripathi, Girija Shankar. *Study on medicinal plants.* BHU. Prof S.N. Tripathi, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

15. Yadav, Ghurbhari Singh. *Ayurveda evam sanskrit natya sahitya ke paripekshya me jivanamdan ka samikshatmak adhyayana (Hindi).* BHU. Dr. L.P. Gupta, Department of Basic Principles, Banaras Hindu University, Varanasi.

16. Yadava, Sushma. *Infant feeding and growth.* BHU. Dr. D.C.S. Reddy, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Al-Ali, Abdul Ameer A.H. *Fundamental models subjects to random shocks and preventive maintenance in the theory of reliability.* Roorkee.

2. Bambawale, Nirmala Moreshwar. *Some contributions to the theory of uniform convergence semigroups and continuity properties.* Nagpur. Prof. N.E. Joshi, Head, Department of Mathematics, Nagpur University, Nagpur.

3. Indira, C. *A study of some incompressible flows with higher order boundary layer effects.* Anna. Dr. M. Arunachalam, Asstt. Prof., Department of Mathematics, College of Engineering, Madras.

4. Kanmani, C. *Some studies in the applications of functional analysis.* Madras.

5. Gupta, Sarita. *Study of some elastodynamic problems.* Barkatullah. Dr. R.M. Paliya, Asstt. Prof., Department of Applied Mathematics, M.A.C.T., Bhopal.

6. Manjini, R. *Contributions to the study of univalent functions in the unit disc.* Madras.

7. Radha, S. *Contributions to the study of the univalent functions.* Madras.

8. Sundaram, V. *Hydrodynamic boundary layers in rotating flows.* Madras.

Statistics

1. Chandra Bhan. *Some non-Markovian queueing systems.* Kurukshetra.

2. Jeyaseelan, L. *A multivariate statistical study on the variations and correlates of menstruation in South Indian women.* Madras.

3. Prem Chand. *A measure to some time dependent queuing systems without/with feedback.* Kurukshetra.

4. Shukla, Sindhu. *On some mathematical models of system reliability.* Ravishankar.

5. Subbarayan, A. *On some methods of construction of partial triallel mating designs for estimation of genetic components of variance.* Madras.

Physics

1. Arunachalam, N. *Statistical theory of hot nuclei and high spin states.* Madras.

2. Elango, N. *Some applications of probability methods in X-ray crystallography.* Madras.

3. Francis, V.M. *Theoretical nuclear physics : A study of interacting Boson model.* Calicut. Dr. S.C.K. Nair, Department of Physics, University of Calicut, Calicut.

4. Ganesan, V. *Low temperature powder X-ray diffraction studies in some inorganic compounds and solid solutions.* Madras.

5. Garg. Arvind Kumar. *Study of charged particle tracks and their annealing behaviour in solid state nuclear track detector—Glass aad plastic detectors.* Kurukshetra.

6. Jagannathan, R. *Fluid structure and dielectric behaviour of mono alcohols and carboxylic acids.* Madras.

7. Jain, Arvind Kumar. *Scattering of electrons and photons by molecular systems.* Roorkee.

8. Kamala, L.V. *Effective nuclear charge model of polyatomic molecules and determination of molecular constants from spectroscopic studies.* Madras.

9. Khan, M. Quaseem Raza. *A study of the interactions of a carbon nuclei in emulsion at 4.5 Gev/C.* AMU. Dr. Rashid Hasan, Lecturer, Department of Physics, Aligarh Muslim University, Aligarh.

10. Kothari, Deepika. *Influence of tetravalent ionic substitution of the hyperfine interactions of Li-Cr and Ni Ferrites by Mossbauer effect and their electrical and magnetic investigations.* Delhi.

11. Lalitha, V. *Study of internal pressure, free volume and conductivity of electrolyte solutions and molecular interaction in liquid mixtures.* Madras.

12. Mallikharjuna Rao, P. *Ultrasonic studies in som binary, ternary systems and liquid crystals.* Madras.

13. Modi, R.P. *Ionospheric studies using radio propagation.* Saurashtra. Dr. K.N. Ayer, Reader, Department of Physics, Saurashtra University, Rajkot.

14. Panigrahy, Nikhilanand. *Theory of electric susceptibility of tetrahedral semi-conductors.* Berhampur. Dr. P.K. Misra, Prof., Department of Physics, Mesa State College, P.O. Box 2647, Grand Junction, CO 81502.

15. Patel, B.D. *Effect of ionization on the process of condensation and its role in the cloud physics.* Roorkee.

16. Phanjoubam, Sumitra. *Mossbauer studies of hyperfine interactions in substituted lithium ferrite spinels and their electrical and magnetic investigations.* Delhi.

17. Ravi, Srinivasan. *Autoionization and recombination processes in strong fields.* Hyderabad. Prof. G.S. Agarwal, School of Physics, University of Hyderabad, Hyderabad.

18. Rizvi, Israr Ahmad. *Study of some alpha induced reactions at the cyclotron energies.* AMU. Dr. Chaubey, Reader, Department of Physics, Aligarh Muslim University, Aligarh.

19. Sharma, Sadhana. *Electron impact ionization of atoms.* Roorkee.

20. Sundararajan, V. *Electron momentum distribution in some transition metals.* Anna. Dr. S. Natarajan, Prof., Department of Physics, College of Engineering, Madras.

21. Thumar, B.T. *Optical study of etch figures in some ionic crystals.* Saurashtra. Dr. B.J. Mehta, Reader, Department of Physics, Saurashtra University, Rajkot.

22. Verma, Ahwini Kumar. *Studies on the mechano, electro and photoluminescence of gold doped ZnS : Au and ZnSe phosphors.* Durgawati. Dr. B.P. Chandra, Department of Physics, Rani Durgawati Vishwavidyalaya, Jabalpur.

23. Yagyik, Yashka. *Electret studies of biological systems.* Kurukshetra.

Chemistry

1. Ajayaghosh, A. *Photolytically cleavable polymeric supports in peptide synthesis.* Calicut. Dr. V.N. Rajasekharan Pillai, Reader, Department of Chemistry, University of Calicut, Calicut.

2. Ashok Kumar, M. *Heterogenous photocatalysis : Preparation, characterization and visible light assisted catalytic reactions of doped and undoped WO_3 particles.* Madras.

3. Aswar, Anand Shankar. *Physico-chemical studies of some coordination polymers.* Nagpur. Dr. N.S. Bhave, Department of Chemistry, Nagpur University, Nagpur.

4. Babu D. Paul. *Oxygen-reducing porous carbon electrodes for acid fuel cells.* Delhi.

5. Babu, S. Hari. *Triphase catalysis : Kinetics and mechanism of organic reactions.* Madras.

6. Beri, Ripla. *Effect of metalloporphyrins on heme metabolism and biosynthesis in rats.* Delhi.

7. Chinnappa, Sheela M. *Role of vitamin pyridoxine in the prognosis of corticosteroids.* Bangalore. Dr. G. D. Kalyankar, 202/8, Devdaya Nagar, Pokharan Road, 1 Thane West, 400606, Maharashtra.

8. Das, Jagadish Chandra. *A geochemical study of the spring waters of Nagaland with special reference to the salt springs.* Gauhati. Dr. P.K. Choudhury, Prof., Department of Geology, Gauhati University, Guwahati and Dr. N. K. Baishya, Prof., Department of Chemistry, Gauhati University, Guwahati.

9. Das, Ratna Dulalchandra. *Kinetics of dehydrogenation of cyclohexanol in fixed bed.* Nagpur. Dr. K.K. Sonune, Reader, Department of Chemistry, L.I.T., Nagpur.

10. Gautam, Ajay. *Some aspects of organic chemistry of chalcogens.* Panjab.

11. Gowriswari, V.V.L. *Baylis-Hillman reaction; a novel carbon-carbon bond forming reaction.* Hyderabad. Dr. D. Basavaiah, Lecturer, School of Chemistry, University of Hyderabad, Hyderabad.

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12. Gupta, Rakesh Kumar. *Spectroscopic investigations and physico-chemical studies on some organic molecules.* Kurukshetra.

13. Gupta, Rashmi. *Kinetics and mechanism of oxidation of some sulpha drugs by periodate.* Roorkee.

14. Indira, V. *Studies on metal complexes of schiff bases.* Calicut. Dr. Geetha Parameswaran, Department of Physics, University of Calicut, Calicut.

15. Jain, Asha. *Studies on the liquid extraction and reverse phase thin layer chromatography of lanthanides and some other element.* Roorkee.

16. Jain, Rashmi. *Chemical and antimicrobial studies of plant products and other organic compounds.* HS Gour. Dr. J.T. Rao, Reader, and Dr. O.P. Chourasia, Lecturer, Department of Chemistry, Dr. Harisingh Gour Vishwavidyalaya, Sagar.

17. Kalavadia, A.V. *Studies on some transition metal complexes.* Saurashtra. Dr. G.K. Joshi, Reader, Department of Chemistry, Saurashtra University, Rajkot.

18. Kampli, Sailaja Kumari. *A study of kinetics and mechanism of some catalysed and uncatalysed oxidation reactions.* Karnatak. Dr. S.T. Nandibewoor, Reader, Department of Chemistry, Karnatak University, Dharwad.

19. Krishnam Raju, Gottumukkala Rama. *Studies on some hydrochemical characteristics of coastal waters off Visakhapatnam, Bay of Bengal.* Andhra.

20. Mujeebur Rahman. *Studies in the chemistry of natural products.* AMU. Prof. Asif Zaman.

21. Niaz, Mohammad Arif. *Studies on the kinetics and mechanism of the alkaline hydrolysis of imides and related compounds.* AMU. Prof. A. Aziz Khan, Department of Chemistry, Aligarh Muslim University, Aligarh.

22. Periaswami, G. *Electrochemical studies related to the development of online meters for use in liquid sodium.* Madras.

23. Raja, S. *Studies on the action of Lewis acids on heterocyclic aromatic acetals.* Madras.

24. Rajendra Prasad. *Studies of adsorption desorption in packed bed of molecular sieves.* Roorkee.

25. Ramachandran, Santha. *Metal complexes of sulpha oxazoles salicylaldimines.* Barkatullah. Dr. S.A. Iqbal, Department of Chemistry, Saifia Science College, Bhopal.

26. Ram Babu, Rallabandi. *Some kinetic and mechanistic studies on the oxidation of tellurium (IV).* Andhra.

27. Sangolli, Veerasangappa Nagappa. *Anion exchange selectivity in mixed solvent media, acetone-water.* Karnatak. Dr. C.S. Narke, Reader, Department of Chemistry, Karnatak University, Dharwad.

28. Santha, K. *Extraction-spectrophotometric determination of metal ions.* Venkateswara. Prof. K. Saraswathi, Department of Chemistry, Sri Venkateswara University College, Tirupati.

29. Sathyamoorthi, G. *Studies in molecular re-arrangements.* Madras.

30. Sehgal, Subhash. *Heterocyclic compounds : Synthesis of some pyrazole and thiazole derivatives of biological interest.* Kurukshetra.

31. Sharma, Harish Kumar. *Synthesis of bimetallic Mg (II), Al(III) alpha-oxoisopropoxide and its reactions with N, O and S containing ligands.* Delhi.

32. Siddiqui, Ishrat Husain. *Chemical and spectra studies of steroids.* AMU. Prof. Shafiullah, Reader, Department of Chemistry, Aligarh Muslim University, Aligarh.

33. Sivasamy, K. *Organic compounds as cathode materials in magnesium battery.* Madras.

34. Suryanarayana, Mulukutla Venkata. *New analytical methods for the determination of some diuretics in pharmaceutical preparations.* Andhra.

35. Swarna Bala, G. *Synthesis and E.S.R. studies of metal ions in less common oxidation states.* Hyderabad. Dr. M.V. Rajasekharan, Lecturer, School of Chemistry, University of Hyderabad, Hyderabad.

36. Thakur, Narad Muni. *Studies on homo and hetero complexes of tungsten and vanadium.* Magadh.

Earth Sciences

1. Gaur, Kaushala Nandan. *A study of Jurassic foraminifera from Jumara Area, Kutch.* AMU. Dr. S.N. Bhalla, Reader, Department of Geology, Aligarh Muslim University, Aligarh.

2. Jolly, Asit. *Vertebrate biostratigraphy, palaeoecology and taphonomy of the eocene ossiferous Kalakot zone, Subathu group, Rajauri District, Jammu and Kashmir, India.* Panjab.

3. Raju, B.N. *Study of recent ostracoda from the coastal and estuary sediments of Durgarasupatnam Dummingkuppam, East Coast of India.* Venkateswara. Dr. K.R. Reddy, Department of Geology, Sri Venkateswara University College, Tirupati.

Engineering & Technolpgy

1. Agnihotri, Ganga. *Economy and security based load flow solution of large scale systems.* Roorkee.

2. Alvi Syed Sabihuddin. *On thermal aspects of surface grinding and abrasive cut-off operation.* Roorkee.

3. Arun Rumar. *Growth and studies of insulating films for silicon devices.* Roorkee.

4. Emmanuel, D. Sudhakar. *Myoelectric signal analysis in hansenology.* Roorkee.

5. Garg, Krishan Gopal. *Earth pressure behind retaining wall with reinforced backfill.* Roorkee.

6. Jain, Shital Parshad. *Reliability studies on large systems.* Kurukshetra.

7. Kakoti, Girish Chandra. *Digital algorithms and relaying schemes for protection of power systems.* Roorkee.

8. Kar, Subal *Microwave properties of impatt oscillators and amplifiers with the device embedded in normal and modified resonant eop cavaties.* Calcutta.

9. Mahendra Kumar. *Some aspects of microprocessor based control systems.* Kurukshetra.

10. Mukherji, Shaktidev. *Reduced order modelling and its application in an industrial process.* Roorkee.

11. Mukhopadhyay, Pracheta. *Studies on thermal dehydration of hydroxides and silicates of some alkaline earth cations.* Calcutta.

12. Narinder Singh. *Digital terrain modelling system for engineering applications.* Roorkee.

13. Ravindran, T. *Studies on polyurethane elastomers based on liquid natural rubber.* CUST. Dr. D. Joseph Francis, Head, Department of Polymers Science and Rubber Technology, Cochin University of Science and Technology, Cochin.

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(I) **Readers** (3 posts) in the pay scale of Rs. 3700-125-4950-150-5700 : **1 post (temporary for about 5 years) in the Department of Health Services Studies, having** MBBS degree plus a post-graduate degree in community medicine; **1 post in the Department of Family and Child Welfare, having** M.A. degree in Social Work with either specialisation in Family and Child Welfare or M.A. degree in Social Work in a generic programme with field work or work experience in the field ; **1 post in the Research Unit for Urban Studies, having** M.A. degree in Demography, Regional Planning or Economics and a Ph.D. degree in related field. Adequate experience in the areas of urban research.

(II) **Lecturers** (5 posts) in the pay scale of Rs. 2200-75-2800-100-4000 : **1 post in the Audio-Visual Unit, having** a Degree or Diploma in Cinema/Audio-Visual media (preferably video) from a recognised University or Institute or a Master's degree in Social Work/Social Sciences with practical experience of about 2 years in producing audio-visual programmes or films : **1 post (reserved for SC) in the Department of Personnel Management and Industrial Relations, having** M.A. degree in Personnel Management and Industrial Relations; **1 post (reserved for SC) in the Research Unit for Social Policy and Social Welfare Administration, having** M.A. degree in Social Work (generic / with specialisation in Social Welfare Administration/Development Administration); Economics (Rural Economics) or Organisational Behaviour; **1 post (reserved for ST) in the Research Unit for Child and Youth Research, having** M.A. drgree in Economics, Psychology, or Sociology; **1 post (reserved for ST) in the Department of Urban and Rural Community Development, having** M.A. degree in Social Work with either specialisation in URCD or M.A. degree in Social Work in a generic programme with field work or work experience of 2 years in this field. Applications from general candidates will not be considered for posts reserved for SC/ST.

(III) **System Incharge** (1 post) in the pay scale of Rs. 3000-100-3500-125-4500, in **the Electronics Data Processing Unit,** having M.A. degree in Social Sciences/Mathematics/Statistics / Business Administration.

(IV) **Assistant Managing Editor (Equivalent to Lecturer)** (1 post), in **the Publication Department,** in the pay scale of Rs. 2200-75-2800-100-4000, having M.A. degree in English language and literature or M.A. degree in Journalism and B.A. degree in English language and literature.

(V) **Superintendent (SC/ST Cell) (One post, reserved for ST)** in the pay scale of Rs. 2000-60-2300-EB-75-3200-100-3500, having a Master's degree in Social Work. The minimum marks required are 5% less than the marks required for a second class. (Explanation : 5% fewer marks constitute the relaxation, this being an ST reserved post). About 2 years of experience in the field of counselling and administrative experience. (This being an ST reserved post, the normal requirement of experience of 4 years is reduced to 2 years).

(VI) **Superintendent (Personnel)** (One post), in the pay scale of Rs. 2000-60-2300-EB-75-3200-100-3500, having Master's degree with at least IInd class with at least 3 years' office experience Or graduate with IInd class, with at least 5 years' experience in a responsible supervisory position in an educational Institution/Institution of national importance.

(VII) **Deputy Accountant** (One post), in the pay scale of Rs. 2000-60-2300-EB-75-3200-100-3500, having M. Com. degree with IInd class with advanced accountancy and auditing or with equivalent qualification with 5 years' experience Or B.Com with IInd class with about 7 years' experience in an educational institution/institution of national importance.

(VIII) **Superintendent (Security) (One post reserved for ST),** in the pay scale of Rs. 2000-60-2300-EB-75-3200-100-3500, having at least a Bachelor's degree. The minimum marks required are 5% less than the marks required for a second class (Explanation : 5% fewer marks constitute the relaxation, this being an ST reserved post), with experience in security work Or HSC (minimum marks required are 5% less than the marks required for a second class) for those in police or military service for at least 15 years and in the rank of officer. (This being an ST reserved post, the normal requirement of experience of 20 years is reduced to 15 years).

N. **Krishnamoorthy**
REGISTRAR

BANASTHALI VIDYAPITH
(Deemed to be University)

Applications are invited for the posts of DEPUTY REGISTRAR/S (Academic/Students Affairs / Examination and Secrecy).

Qualifications : Essential

(a) First or High Second class Post-graduate degree.

(b) At least eight years administrative experience in a position involving supervision, control and planning

OR

Eight years teaching experience in a University or a Post-graduate College with experience in educational development.

Desirable : Familiarity with the life and working of a University or with educational administration in a College, University or an Institute of Higher learning or Research.

Grade : 3700-125-4950-150-5700
(Total initial emoluments Rs. 4715/- p.m.)

Dearness Allowance, Contributory Provident Fund, Gratuity-cum-Insurance as per Vidyapith rules. Residential accommodation at subsidized rates.

Notes : 1. Employees must become habitual wearer of KHADI on appointment.
2. Selection Committee may recommend higher start and may also recommend for relaxation in any of the qualification above in exceptional cases on merit.
3. The Vidyapith reserves the right to reduce or increase the number of vacancies or not to fill up any post advertised.
4. Vidyapith will not be able to meet travel cost but will contribute assistance upto return second class fare of the shortest route for appearing at interview.
5. Other things being equal WOMEN WILL BE PREFERRED.

Complete Bio-data on plain paper (seven copies) must reach The Secretary, Banasthali Vidyapith, P.O. Banasthali Vidyapith, Rajasthan-304022 by 9th December, 1989. No. 13/89.

ANNAMALAI UNIVERSITY

ANNAMALAINAGAR

Notification No. 5/89
Dated : 3-11-89

Applications are invited in the prescribed form for filling up of the following posts of Professors/Readers/Lecturers. Application forms can be had from the undersigned on payment of Rs. 10/- (Rupees ten only) (Not refundable) by cash/money order/postal order. Applications (with 5 additional copies) should reach the undersigned on or before 11-12-89.

1. Professor of Agricultural Chemistry	One
2. Professor of Agronomy	One
3. Reader in Business Administration	One
4. Reader in Library & Information Science	One
5. Reader in Inorganic Chemistry	One
6. Reader in Bio-Chemistry	One
7. Reader in Marine Biology (for Fishery Science)	One
8. Lecturer in Sociology	One
9. Lecturer in Library & Information Science	One
10. Lecturer in Bio-Chemistry	One
11. Lecturer in Marine Biology	Two
12. Lecturer in Production Engineering	One
13. Lecturer in Pharmacy	One
14. Lecturer in Agricultural Chemistry	One

Qualifications

Sl. No. 1 & 2 : A person with Ph. D. Degree with ten years of experience in teaching/research in the subjects concerned.

Sl. No. 3 & 4 : A person with a good academic record with Doctoral Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About 5 years experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Sl. No. 5 to 7 : A person with a good academic record with a Doctoral Degree or equivalent published work in the subjects concerned. Evidence of being actively engaged in (i) Research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About 5 years experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

For Sl. 6

Research experience in biochemical pharmacology, biochemical toxicology, biochemical genetics is required.

Sl. No. 8 & 9 : (a) A person with a Doctor's Degree or research work of an equally high standard,

and

(b) Good academic record with atleast 55% of marks in Master's degree or its equivalent grade in a relevant subject from an Indian University or any equivalent degree from a foreign University.

Sl. No. 10 & 11 : (a) A person with a Doctorate Degree or research work of an equally high standard,

and

(b) Good academic record with atleast 55% of marks in Master's degree or its equivalent grade in a relevant subject from an Indian University or an equivalent degree from a foreign University.

For Sl. 11

Experience in Teaching/Research in (i) Marine Ecology/Chemical Oceanography OR (ii) Marine Fisheries/Museology is required.

Sl. No. 12 : A person with a First Class Bachelor/Master's Degree in appropriate field in Engineering/Technology.

Sl. No. 13 : A person with a Master's degree with Pharmaceutical Chemistry specialisation with atlest 55% marks or its equivalent grade and good academic record.

Sl. No. 14 : A person with a Ph. D. degree or Master's Degree in the subject concerned with three years experience. A minimum OGPA of 3.50/4.00 or its equivalent is essential.

Scales of Pay

Professor: Rs. 4500-150-5700-200-7300 with admissible allowances
Reader : Rs. 3700-125-4950-150-5700 with admissible allowances
Lecturer : Rs. 2200-75-2800-100-4000 with admissible allowances

Candidates invited for interview for the post of Professors and Readers will be paid a single second class to and fro railway fare.

Those who are in service should route their applications through proper channel.

R. Rajamanickam
REGISTRAR

REGIONAL ENGINEERING COLLEGE

HAZRATBAL

SRINAGAR, KASHMIR

Advertisement Notice No. 5 of 1989

Dated : 6-11-1989

Applications on plain paper giving full bio-data alongwith attested copies of all academic documents including Date of Birth Certificate are invited for the post of "PROFESSOR" in the Department of Mathematics in the pay scale of Rs. 4590.150-5700-200-7300. Applications complete in all respects and accompanied by an Indian Postal Order for Rs. 20/- (Rs. 10/- in case of Schedule Caste/Schedule Tribe, Handicapped and Socially and Educationally Backward Class candidates) should reach the undersigned by December 04, 1989.

Qualifications :

(i) Ph.D. degree with a Ist class, M.Sc. in Mathematics;

(ii) 10 years' experience in teaching/research out of which at least 5 years must be at the level of an Assistant Professor or equivalent.

Prof. A.R. Chesti
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI

Advt. No. A&E-II/7/89

JNU has openings for faculty positions as indicated below :

SCHOOL OF COMPUTER & SYSTEMS SCIENCES

(1) Professor—Three
(2) Associate Professor—One
(3) Assistant Professor—Three

SCHOOL OF LANGUAGES

(4) Associate Professor [illegible] Japanese—One
(5) Assistant Professor in Persian—One
(6) Associate Professor in English—One

SCHOOL OF INTERNATIONAL STUDIES

(7) Professor in South East Asian Studies—One
(8) Associate Professor in South Asian Studies—One
(9) Assistant Professor in Latin American Studies—One
(10) Professor/Associate Professor/ Assistant Professor in Political Science—Two
(11) Professor in International Space Law—One
(12) Associate Professor in International Law—One

SCHOOL OF SOCIAL SCIENCES

(13) Professor (Geography)—One

SPECIAL CENTRE FOR BIOTECHNOLOGY

(14) Assistant Professor in Bio-Physics/Bio-Physical Chemistry—One

SCHOOL OF LIFE SCIENCES

(15) Professor in Radiation Biology—One
(16) Assistant Professor in Biophysics—One

Essential Qualifications for all Faculty Positions

Professor (Grade Rs. 4500-7300) : (a) An eminent scholar with published work of high quality, actively engaged in research. About ten years' experience in teaching and/or research. Experience of guiding research at doctoral level. OR (b) An outstanding scholar with established reputation who has made significant contribution to knowledge.

Associate Professor (Grade Rs. 3700-5700) : Good academic record with doctoral degree or equivalent published work. Actively engaged in research or innovation in teaching methods of production of teaching materials. About five years' experience with minimum three years as lecturer or equivalent position.

Assistant Professor (Rs. 2200-4000) : Master's degree in the relevant subject with at least 55% marks or its equivalent grade, and good academic record.

Relevant Subjects/Specialization/Desirable Qualifications

For Posts No (1), (2) & (3) : Specialization in Theoretical Computer Science, Parallel and distributed computing, systems software, artificial intelligence, Expert systems and pattern recognition, Operations research, Optimisation and application, Modelling and simulation, computer graphics. Computer architecture, Microprocessor and its application VLSI design.

For Post No. (4) : (a) Experience of teaching through audiovisual aids; (b) Familiarity with latest teaching methods; (c) Experience of teaching Degree and Post-Graduate Classes/ guiding research. **For Post No. (5) :** (a) Competency in Spoken Language; (b) At least 3 years teaching experience in recognised College/University, (c) Adequate knowledge of Indo-Iranian Relations/Studies. **For Post No. (6) :** Renaissance/17th Century/18th Century English Literature OR comparative Literature. **For Post No. (7) :** Knowledge of South West Pacific Studies. **For Post No. (8) :** At least four years research experience in Regional cooperation among Developing countries preferably with grounding in Economics. **For Post No. (9) :** (a) Master's Degree in Political Science; (b) Ph. D. or equivalent scholarly publications in Latin American Studies, alongwith advanced course work on the area; (c) Competene in Spanish Language; (d) Experience of research and publications on Latin America; (e) Teaching experience at post-graduate level. **For Post No. (10) :** Master's Degree in Political Science with Specialisation in (a) Political thought (Western and Indian, ancient and modern); (b) Comparative governments and Politics : (c) Indian Political System. **For Post No. (11) :** Specialization/Significant contribution to knowledge in the International Space Law. **For Post No. (12) :** Teaching/research experience in International Law for five years; should be able to teach and guide research in International Trade Law. **For Post No. (13) :** (a) Master's Degree in Geography; (b) should have proven evidence of having done outstanding research in any one of the fields of urban geography, rural settlements and agricultural geography as related to the process of regional development. **For Post No. (14) :** Aptitude for teaching is highly desirable. **For Post No. (15) :** (a) Master's Degree in Zoology/Bio-Chemistry/Cell-Biology; (b) Must have proven experience of having contributed to the mechanisms of radiobiological effects in vitro and in vivo animals. **For Post No. (16) :** (a) Master's Degree in Biophysics/Physics. (b) Proven experience in the field of Molecular Biophysics/NMR Spectroscopy/Membrane Biophysics/Electrophysiology.

The University on the recommendations of Selection Committee reserves the right to fill up the advertised positions at lower levels and also consider the names of suitable candidates who may not have applied.

15% and 7-1/2% of the posts of Assistant Professors are reserved for SC and ST candidates respectively. Any of the qualifications, experience may be relaxed at the discretion of the University.

Application forms may be obtained free of cost in person or by sending a self-addressed envelope (23 cm × 10 cm) duly stamped to the Deputy Registrar (Aca. & Estt. II), Room No. 204-B, Administrative Block, Jawaharlal Nehru University, New Delhi-110067. The applications in prescribed form complete in all respect duly forwarded by the Competent Authority (for those in service) should reach this University latest by **15th December, 1989**.

PUNJABI UNIVERSITY
PATIALA

Advt. No. 77/PRO/Rect/89
November, 1989

Applications, on the prescribed form, are invited for the following posts so as to reach the Deputy Registrar (Establishment) by **December 4, 1989**.

1. **Professors, Persian :** One each for Bio-technology, Forensic Science, for the University Deptts. and one for

Urdu for Nwab Sher Mohammad Khan Institute of Advance Studies in Urdu at Malerkotla.

Specializations

Forensic Science : Forensic Biology and Serology including Physical Anthropology and Forensic Medicine.

Persian : Classical Literature.

Desirable : For the post of Professor in Urdu, preference will be given to those possessing additional qualifications in Persian and Arabic and for the post of Professor in Persian, preference will be given to those possessing additional qualifications in Urdu and Arabic.

2. **Readers :** Two (One in Urdu, One in Persian) for Nwab Sher Mohammad Khan Institute of Advanced Studies at Malerkotla, two for Computer Science and Applications and One each for Human Biology, Astronomy & Space Science, Commerce (Correspondence Courses), Journalism & Mass Communications Departments.

Specializations

Computer Sc. & Applications. Ist post: Computer Communications/Analog and Digital Circuits and Design.

2nd post : System Simulation/Artificial Intelligence.

Human Biology : Anatomy/Physiology.

(Candidates should hold M Sc. and Ph. D. degree in Anatomy/Physiology with 5 years post-graduate teaching experience as Lecturer and should be able to teach both Anatomy and Physiology at post-graduate level).

Astronomy & Space Sc : Experimental Astronomy.

Journalism & Mass Communication : Mass Communication.

Desirable Qualifications in the case of Readers in Urdu/Persian & Commerce

Urdu & Persian : Preference will be given to those who have additional qualifications in Urdu and Arabic in the case of Reader in Persian and Persian and Arabic in the case of Reader in Urdu.

Commerce (Correspondence Courses) : Capability of teaching paper of Economics related to Commerce.

3. **Lecturers :** One each for Urdu, Chinese, Punjab Historical Studies and Bio-technology.

Desirable for Lecturer in Urdu : Preference will be given to candidates who hold Master's degree in Persian also.

Specializations : Punjab Historical Studies : Besides fulfilling the general qualifications laid down by the U.G.C., the candidates must have read Punjab History upto M.A. level. Preference will, however, be given to candidates having

(i) Ph. D. degree or equivalent research work.
(ii) 5 years research experience including editing of research Journal/conference proceedings.
(iii) Worked in an Oral History Cell and
(iv) experience of collection of research material, survey of historical places and working knowledge of reporography and microfilming.

Biotechnology : The candidates must possess basic degree (M.Sc./M. Tech.) in any branch of Science with specializations in Biochemical Engineering/Cell and Tissue Culture Technology/Genetic Engineering/Environmental Biotechnology/Molecular Biophysics/Metabolism.

NOTE

1. The Vice-Chancellor could also place before the Selection Committee names of suitable persons for the post of Professor.
2. It is not obligatory to call for interview every candidate who possesses the essential qualification.
3. Incomplete application forms will not be entertained.
4. Candidates must possess working knowledge of Punjabi.
5. Teaching Posts carry U.G.C. pay scales and qualifications. In case suitable candidates with these qualifications are not available or are not found suitable, the Syndicate may relax the qualifications on the recommendations of the Selection Committee.

APPLICATION FORMS can be obtained from the Head, University Publication Bureau, on payment of Rs. 15-00 at the counter or by sending IPO for Rs. 15-00 in favour of the Registrar alongwith a self-addressed envelope (25 x 10 cms) affixed with postage worth Rs. 7.00 and indicating on it the name of the post applied for——.

REGISTRAR

INDIAN INSTITUTE OF SCIENCE

BANGALORE-560 012

REQUIRES

DEPUTY LIBRARIAN IN THE LIBRARY

Qualifications and Experience

Essential : (a) M.Lib.Sc. with First or High Second Class and atleast a High Second Class Degree in any other subject.

(b) Atleast six years experience as Assistant Librarian or equivalent in a Library of a University or an R&D Institution.

Desirable : Ph.D. Degree or equivalent research work in a field relevant to the profession. Experienee in Computerisation of Library Systems, Computerised Information Processing.

EMOLUMENTS : Rs. 5,790/- p m. in the minimum of the scale Rs. 3700-5700.

Details and prescribed application form can be obtained from the Registrar on request accompanied by an IPO for Rs. 10/- (free of cost to SC/ST on production of Caste Certificate from a competent authority) drawn in favour of the Registrar alongwith a self-addressed stamped (Rs. 2-00) envelope of the size 28cms × 18cms. on or before 4th December, 1989.

R(IA)30832/89 REGISTRAR

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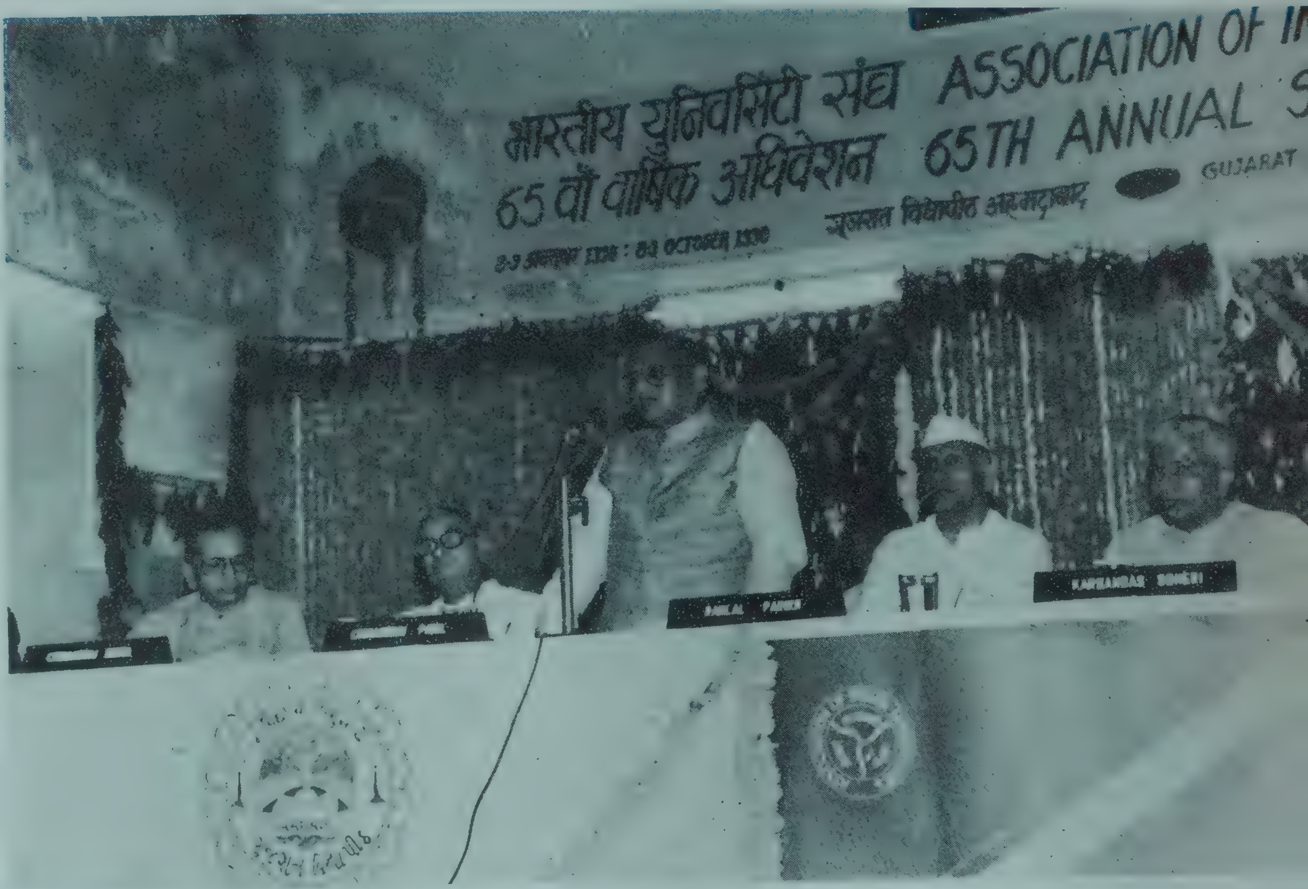
C.F.T.R.I., MYSORE

ISSN – 0566-2257

University News

MONDAY, NOVEMBER 26, 1990 Rs. 2.50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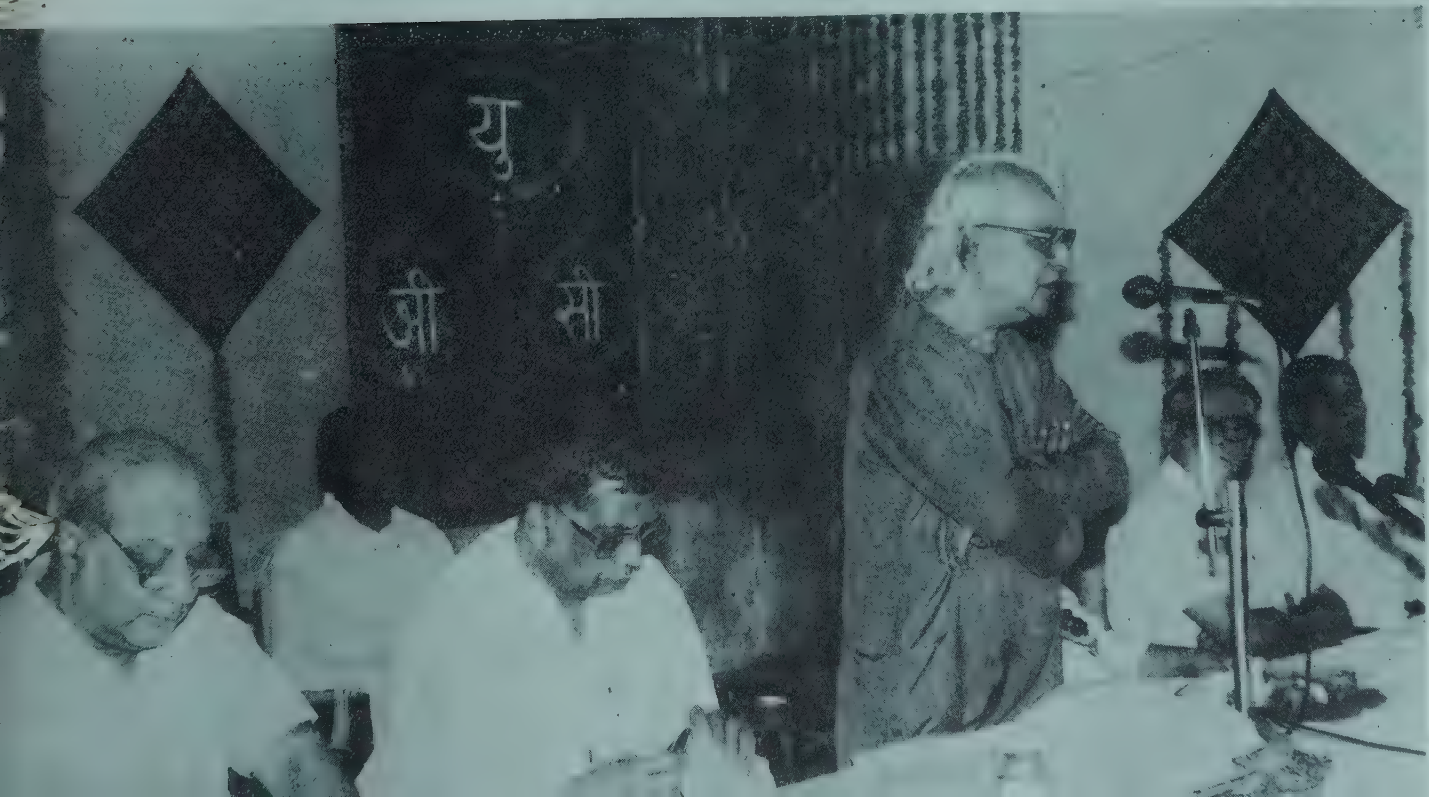
65 वाँ वार्षिक अधिवेशन 65TH ANNUAL S
गुजरात विद्यापीठ अहमदाबाद
GUJARAT
KARSANDAS SONERI

ri Chimanbhai Patel, Chief Minister Gujarat, addressing the 65th nnual Session of the Association of dian Universities. (From L to R): of. V.C. Kulandai Swamy, President, IU & VC, IGNOU, Shri Chimanbhai ehta, the then Union Minister of ate for Human Resource Development, Prof. Ramlal Parikh, VC, Gujarat idyapith and Shri Karsandas Soneri, ducation Minister, Gujarat.



Prof. Yash Pal, Chairman UGC, addressing the VC Conference on Distance Education. Prof. S.K. Khanna Vice-Chairman, UGC is seen on extreme left.

POST GRADUATE INSTITUTE OF MEDICAL EDUCATION & RESEARCH
CHANDIGARH

ADMISSION NOTICE NO. 15/90 (ACAD.)

Applications, on prescribed form are invited for the following post doctoral courses and Ph.D. programme for the academic session starting from First January, 1991:-

1. SENIOR RESIDENTS: 21 (for DM/M.Ch. courses) in the following subjects:-

D.M.		M.Ch.	
1. Cardiology	2	1. Cardiovascular & Thoracic Surgery	2
2. Clinical Pharmacology	1	2. Neurosurgery	3
3. Endocrinology	3	3. Paed. Surgery	1
4. Gastroenterology	2	4. Plastic Surgery	3
5. Nephrology	1	5. Urology	3

i) Six posts (one each for D.M. Courses in Cardiology, Endocrinology & Gastroenterology and M.Ch. courses in Neuro Surgery, Plastic Surgery and Urology and reserved for candidates belonging to Scheduled Castes/Tribes).

ii) A limited number (1-2) of sponsored/deputed candidates may be accepted in the all subjects mentioned above and also for D.M. courses in Neurology.

iii) Upper age limit on 1.1.1991 not more than 35 years for general candidates and 40 years for candidates belonging to Scheduled Castes/Tribes and for ex-servicemen and commissioned Officers including E.C.O./S.S.C.Os., released on satisfactory completion of assignment (including those whose assignment is due to be completed within 6 months). No upper age restriction for deputed/sponsored candidates.

iv) Candidates due to appear in MD/MS examinations during Nov., Dec., 1990 can also apply. They will be admitted to the entrance test only if they supply the result of their examination from the University concerned atleast a day before the entrance test.

II. Ph.D. Programme in the department of Experimental Medicine.

GENERAL INFORMATION

1. For all courses etc., where MD/MS or MBBS is an eligibility requirement, candidates who have made more than one attempt during their MBBS course are not eligible. However, those belonging to Scheduled Castes/Tribes with upto two attempts in their MBBS career will be eligible.
2. Those applying for the reserved seats must append, with their applications, a certificate from the District Magistrate concerned in support of their claim. No other certificate will be entertained.
3. Number of seats wherever indicated is provisional and is subject to change without prior notice.
4. Application must be accompanied with non-refundable fee of Rs.60/- in the form of postal order drawn in favour of the Director of this Institute for each of the courses mentioned above. Those applying for more than one subject are required to submit separate applications complete in all respects for each subject.
5. Application form and detailed information are available from the office of the undersigned either personally on payment of Rs.20/- at the counter from 10.30 AM to 11.30 AM on all working days and from 2.30 PM to 3.30 PM on all working days (except Saturdays) or by post for which the request must be accompanied with a self addressed envelope size (23 x 10 cms) bearing postage stamps of Rs.4.50 and crossed postal order for Rs.20/- drawn in favour of the Director.

CLOSING DATE FOR RECEIPT OF APPLICATIONS IS 26th DECEMBER, 1990.

O.P. Sharda
REGISTRAR

UNIVERSITY NEWS

VOL. XXVIII NOVEMBER 26
No. 48 1990
Price Rs. 2.50

A Weekly Chronicle of Higher Education published by the Association of Indian Universities

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Productivity of the System of Higher Education in India

V. G. Bhide*

A one day group discussion on the subject "Universities and Productivity" was organised on October 9, 1990 at Gujarat Vidyapith on the occasion of the 65th Annual Meeting of the Association of Indian Universities. This paper and the others that follow were presented at the group discussion. We are happy to publish these papers for the benefit for our readers.

I. THE DIAGNOSIS

Size and Growth of the System of Higher Educaion in India

The system of higher education in India, in terms of the number of universities, number of affiliated colleges, student enrolment, faculty strength, resources allocated etc. has been expanding and diversifying almost exponentially since independence and today,it is one of the largest educational systems in the world. The number of universities which were 33 in 1956-57 rose to 156 in 1986-87 and today we have about 190 universities. Some of these about 10 are institutes of higher learning, about 30 deemed universities and the rest conventional and as someone humorously but somewhat justifiably called doomed universities. Likewise, there has been a phenomenal growth in the number of affiliated colleges, the number increased from 1107 in 1956-57 to over 6000 in 1986-87. The student enrolment galloped from 3,26,936 in 1956-57 to 36,81,370 in 1986-87. The present enrolment exceeds 5 millions. There has, however, not been a commensurate increase in the investment on education. Indeed, the percentage of the funds allocated to education out of the total plan outlay declined from 7.2% in the first five year plan to about 3.5% in the seventh five year plan. A notable feature of the Indian higher education system, since independence, has been the expansion of education for engineering and technology, agriculture and medicine, so much so that the proportion of the professional students to the total enrolment has remained nearly constant in spite of a very rapid rise in the total population in higher education, although the available places fall shot of the demand - demand as distinct from the needs. The increase in the number of universities, number of colleges, etc. marks a growth rate of about 8% per annum with a doubling period of about 8-10 years.

Although there has been a phenomenal growth in higher education in recent years, this growth has been uneven, haphazard and unplanned without allocation of commensurate resources. The facilities provided in the universities and colleges vary widely. There are many colleges which do not have adequate number of adequately qualified teachers, infrastructure in terms of library, laboratories, play fields, hostels etc. Indeed, out of 6040 affiliated colleges in 1986-87, as many as 3762 had not received recognition from the University Grants commission. Several colleges and indeed many universities have been opened without consultation or against the advice of the University Grants Commission, without adequate facilities and needs. All the same, the system of higher education has continued to evolve, diversify and extend its reach and coverage over the last forty five years.

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* *Director, Inter University Consortium for DAE Facilities, Indore and Former Vice— Chancellor, University of Poona*

Role of Higher Education

There is no doubt that education is one of the most essential tools for any modern nation to achieve social, economic and political objectives for meaningful national development. The intrinsic intellectual dynamism, resourcefulness, and the moral strength of a nation is reflected in the quality of higher education which provides political, intellectual, scientific and professional leadership. Scientific and technological basis of modern world, more than anything else, has made higher education, as never before the most important element in the life and progress of a nation. Economic and social development, welfare and security are closely dependent on the extent and quality of higher education. It is no mere rhetoric when one says that the destiny of India is being shaped in our colleges and universities. It is on the quality and the nature of the persons coming out of our colleges and universities that will depend the success of our efforts in national reconstruction and social transformation. India has reached a stage in its social, economic and technical development when one must assess the efficacy of our educational system which is in fact the foundation of all the developmental infrastructure and activity.

Productivity of any system is essentially the efficiency with which the system achieves the aims and objectives for which it is established. The aims and objects of the system of higher education are not space and time invariant and should reflect the social, economic and scientific environment of the society of which it is a part, at a given instant of time. Consequently, every country need to pattern its educational system to express and promote its unique socio-economic identity and also to meet the challenge of time. In a sense, the dynamism of the university can be measured from not only how fast it responds to the changes in the socio-economic environment but also by the effectiveness in creating conditions and atmosphere which would lead to changes in the right direction.

Changing Pattern of the System of Higher Education in England

A careful review of the university education over the ages will show that its purpose has changed over time. In the ancient world, that is during the classical epoch - universities as we know them today as privileged corporate associates of masters and students with statutes, with seals and with distinct administrative machinery, approved curricula and regulations for the award of degrees etc. did not exist. But the schools existed for the teaching of the subjects like liberal arts, philosophy, ethics, sociology, etc. These schools were the centres of higher education in ancient Greece, Rome, Arabia etc. In India, we had the Gurukul system wherein the students lived with the teacher and learnt from him through a dialogue as evidenced by the great Upanishadas. The origin of the universities which were said to evolve from the latter part of the 12th century can be traced by these schools and the gurukuls. The changing objectives and composition of the university system have been well articulated by Lord Robbins. In the early stages in England, the students were trained and prepared to go in to Church, Law, Medicine etc. Advancement of knowledge was not a major activity of the universities at that time. During the era which preceded the industrial revolution, the universities in England existed to provide liberal education with the objectives of developing moral and intellectual capacity of the individual. It was never intended to prepare a student for a particular job or occupation nor to train him for a future career. Although liberal education was not a vocational training, it was a belief then that as a training of the mind, it enabled the graduates to analyze and solve problems in any field. It was claimed to be an excellent preparation for all careers, the students who went in for this education were not many and had no cause to earn a living except for a few who would go into the church or,civil service. Only the children of the aristocracy whose position was already assured in the society went to the university.

Gradually, the role of the universities changed in England to include teaching and research. Towards this end, the universities were required to provide training and to foster the preservation and advancement of knowledge. This new role was essentially a twentieth

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century phenomena necessitated by the industrial revolution and the increasing role of science in economic and industrial growth. It is in this era that the universities in England loosened their ties with the church, drew closer to the industry by accepting its funding and in turn promoting industry's growth through the organization of research relevant to the industry and by producing graduates seeking employment in the industry. This ensured a symbiotic relationship between industry and university, one feeding and reinforcing the other. This also brought universities closer to Government because the government realised in increasing measure the role of science and technology in industrial growth and economic progress.

University education in Britain is presently under review because of the problems of unemployment, increased sophistication of technology and progressive automation. In a recent report to British Parliament, stress is laid on the effect of changing situation on the education system. It states "British society has become more complex and diverse. Values and institutions are increasingly called in question; the pace of technological change has quickened and unemployment has added to the pressures of daily life which has become more precarious and sometimes more turbulent". It emphasised the need to orient the education system to suit and cater to the demands of time. In almost all the advanced countries as also in Britain educational systems have been in the vanguard of economic progress, industrial development and social transformation. Indeed, one observes that the universities in these countries have led to society, industry, commerce etc. and in turn, the society and the governments have sustained the universities. It is quite common in the USA and in other developed countries for the university dons to be called upon to participate and lead in foreign, economic, scientific, technological etc. policy formulations and implementation.

Aims and Objects of Higher Education in India

In India also there have been changes in the aims and objectives of our system of higher education as well as in the productivity of the system. It is essentially the universities in India which promoted, nourished and nurtured critical and uninhibited dialogue between bright and inquisitive students and the experienced teachers that enabled us to reach lofty heights in philosophical thought. Our universities of the past, Nalanda and Takshila attracted students from far and wide. It was essentially due to intercine quarrels and external invasions that not only did we lose our independence but also snapped our ties with this ancient tradition of scholarship and learning.

Sir Charles Wood's famous dispatch in 1854 set out, in a sense sealed, the British educational policy in India. We have still not got out of the dismal limitations and orthodoxy of that imposed system. Its keynote was diffusion of western knowledge and culture and training of people for subordinate administration and secretarial services in a Government controlled and directed by the British rulers. Oriental studies were ignored. Shakespeare was more important than Ramayana and Shakuntala. Greek and Latin were more prestigious than Sanskrit and Arabic. The great cultural and spiritual thought of India, confluence of many cultural streams and strands found no place in the universities first established in the country in 1857. With the passage of time, ignorance of their own heritage led people to believe that it was not worthy of serious study and attention. The centre of India's intellectual life, whatever it was, moved away from India and has not yet been recaptured. The system turned out educated Indians but without roots in their soil and culture. It discouraged identification with the community. It provided English education but smothered the souls. There were of course great exceptions but the educational system could hardly take the credit for exceptional individuals who came out of it or in spite of it. The system lacked and even rejected Indianness and the country is paying dearly for the neglect and aberration. Ramendra Sunder Trivedi, a distinguished and percipient scholar said in his memorandum to Sadler Commission, "Western education has given us much but there has been a cost, a cost as regards culture, a cost as regards respect for the self and reverence for others, a cost as regards the mobility and dignity of life." Fortunately, the members seeking higher education then was so small that the great majority of the people did not suffer this aberration. In fact, in 1886 there were only 11,500 students (10 women) in 114 colleges in the entire country which constituted barely 0.01% of the population, with the result that the great majority of the people did not suffer this aberration.

After independence the system of higher education grew quantitatively without any qualitative and basic changes in its objects, functions and role. Indeed, this growth was merely an extension of the system imposed by the British to the detriment of dignity, culture and oneness. There have been sporadic and periodic efforts to redefine and sharpen the aims and objectives of the universities. Pandit Nehru in his convocation address to Allahabad University said, "A University stands for humanism, for tolerance, for reason, for adventure of ideas, and for search of truth. It stands for the onward march of the human race towards even higher objectives. If the universities discharge their duties adequately then it is well with the people, and the nation." Radhakrishnan and Kothari Commissions also brought into a sharp focus what universities of independent India are expected to do. They said universities have to produce leadership in politics and administration, the profession, industry and commerce. They have to meet increasing demand for every type of higher education, literary, scientific, technical and professional. They must enable the country through scientific knowledge and trained minds to attain in as short a time as possible freedom from want, disease and ignorance and bring together material resources and human energies. The National Policy on Education (1968) enunciated the objectives of the higher education system and stated, "the system of higher education must produce young men and women of character, ability, committed to national service and development, only then will education be able to play its vital role in promoting national reconstruction, creating a sense of common citizenship and culture and strengthening of national integration". It went on the add, "the universities have to be in the vanguard of economic development and social transformation. They have to serve as fountainheads of attitudes, values, skills, techniques etc." It re-echoed the sentiments expressed by Sir Ceryl Jones in his presidential address to the International Association of Universities. Sir Ceryl said, Universities are not ivory towers or cloistered bases of peace in which to escape from the problems and frustrations of the contemporary world. They are the centres of struggle. They are battlefields on which the victories will largely determine the future pattern of our society. The National Policy on Education 1986 did not articulate on the aims and objects of the universities but highlighted the importance of higher education. It said, "higher education provides people with an opportunity to reflect on the critical, social, economic and cultural, moral and spiritual issues facing humanity. It contributes to national development through dissemination of specialized knowledge and skills. It is, therefore, a crucial factor for survival". It went on to add, "in the context of the unprecedented explosion of knowledge, higher education has to become dynamic as never before, constantly entering uncharted areas". Being conscious of the deterioration of the system of higher education, it said, "urgent steps will be taken to protect the system from degradation. In spite of the varying emphasis on one or another aspect of higher education, there seems to be near unanimity in the perception of the policy makers as well as in policy formulation about the aims and objects of the universities. They all agree that with symbiotic combination of youth and age, of creativity and maturity of scholarship and learning, of education and research, universities should and must provide leadership to the society and participate fully in the process of economic development and social transformation. These onerous responsibilities are to be discharged by the universities through, (1) undertaking research with a view to broaden the horizons of human knowledge, develop technologies for speedier agricultural and industrial development, (2) initiating and pursuing educational and training programmes with a view to impart knowledge and information, imbibe right kind of attitudes and outlooks, inculcate proper values, develop skills and techniques, and (3) mounting extension programmes to overcome the problems faced by the society such as population explosion, growing illiteracy, mounting poverty, degrading environment etc. In a sense, universities should articulate socio-economic objectives, make efforts to pursue them and contribute to national development and social transformation.

Performance of the System of Higher Education

The aims and objects of the universities in India are thus highly important and onerous but certainly not difficult to achieve. A close look at the track record of some of the universities in developed countries such as Oxford and Cambridge, Paris and Munich, Harvard and Princeton, MIT and Caltech show vividly how these universities have been in the vanguard of economic development and social transformation in their respective countries. They have become almost the conscience keepers of the respective nations and the brains trust of their governments. Even in India, our ancient universities performed admirably and attracted people from far and wide for their intellectual pursuits. Admittedly, the problems involved in coming up to the above expectations, are many and complex but by no means insurmountable. They can be achieved through dedication and devotion, hard work and sacrifice, research and extension. The most tragic aspect of the situation is that not only in the minds of the public or the political leaders but also amongst the university dons is there a clearer understanding of the role and the significance of the university. The university is generally regarded by the Public as examination shops wherefrom degrees and certificates can be procured by fair or foul means. The students regard them as waiting places for suffering unavoidable hardships on the basis of which they hope to enjoy better life in future. The teachers have come to regard these places as sanctuaries for lesser and lesser work and greater and greater benefits. The teachers are not interested in academic forums where one hopes to experience fierce clash of ideas for generating an ethos for scholarship and learning but indulge in unacademic pursuits of denegrading colleagues. They enjoy character assassination rather than endeavour to build attitudes and values. All this has led to the continuing deterioration in the standards of teaching and research. There has been growing unrest on campuses bordering on chaos. Universities have become hot beds of politics and intrigue. In do-or-die politics of rancor and opportunism by various ideological creeds borrowed from all sorts of places and in the name of democracy and socialism, there has been so much devaluation of moral values, so much bitterness and so much corruption to the detriment of national objectives. Instead of study groups debating intensely a particular idea or ideology, technique or innovation, there is mushrooming of coaching classes. Instead of generating and promoting dialogue between bright students and their teachers, thereby expanding the horizons of human knowledge, there is increasing tendency to dictate notes inhibiting curiosity, promoting parroting those who have parrotted others. Thirst for knowledge has been replaced by craze for degrees. This is not being unduly critical bordering on self flagellation but almost a true picture of the present day universities in India. There are of course some brilliant exceptions but the system cannot take credit for these as they exist not because of it but in spite of it.

Commercialization of Education

There has been tremendous expansion of the system of higher education. Most of the newly established universities and colleges are created by the State Governments ostensibly with the purpose of catering to the needs of a particular linguistic, cultural or social requirement or to satisfy political opportunism and distribution of favours. Several universities, laments the estimates committee of the Parliament, are opened without consultation with the UGC or against the advice of the UGC or without adequate needs and facilities. In 1986, as many as 3762 colleges out of 6040 colleges were not recognized by the UGC. All this has led to menacing commercialization of education. Postgraduate departments and professional colleges - medical and engineering are opened by local political leaders on 'no grant' basis without adequate number of teachers with adequate qualifications and experience, without laboratories, libraries, play fields etc. It is shocking to note that medical colleges are being set up without hospitals, engineering colleges without workshops and laboratories, B.Ed. colleges without practicing schools. Being 'no grant' institutions they seem to have a licence to collect huge capitation fees from gullible parents who desire to secure for their wards admission in the hope of ensuring better future. The lessons of corruption are given even before an impressionable child enters the institutions of higher learning and are continued throughout their study in the institutions through the process of the use of unfair means at the examinations not only connived at by the faculty but even initiated and promoted by them so that their jobs remain secure. These are the values the system of higher education tends to imbibe on the minds of the students. One has only to imagine how they will perform when they embark on their career.

Rising tide of mediocrity

The unplanned and unbridled growth of higher education in the name of providing opportunities to whosoever is desirous of seeking admission irrespective of his aptitude and capability has untold consequences. The students enter the system not because they are keen on knowledge, skills and values but because they must do something and they do not know what else to do. Similarly, people take up teaching profession not because they enjoy teaching and are dedicated to it but because they see in teaching jobs a service which has plenty of leisure and no monitoring and no evaluation. Unlike in the past, they enter the profession not as a first choice but as a last resort, not in the spirit of self sacrifice but with the purpose of self seeking. With such a combination of students and teachers, academic excellence and moral values are the sure casualties.

The Conference of Vice Chancellors recommended that there should be a least 210 working days with longer duration of the day. The working group of the UGC recommended 180 working days excluding the examination days, social gathering etc. The recent survey conducted by the National Commission on Teachers in Higher Education revealed that the average number of working days is around 145. Even on the days on which teaching takes place, the survey indicates that 20% of the teachers do not come prepared for their classes and a similar number dictate 'notes' which were made several years earlier. One must realize that it takes much too long to train and motivate and make a good teacher. This period is four to five times longer than the rate at which our system of higher education is expanding. Many of these teachers perhaps unwittingly kill the spirit of enquiry and dampen the curiosity. One often comes across a situation where a particularly harassed teacher authoritatively shuts off even superficial enquiries from the students. This completely undermines the confidence of the student and subjects him to ridicule. It cannot be over emphasized that creative activity in any discipline much more so in science progresses only by questioning. Questioning the basic is the heart of creativity. If we prevent the students from asking even the superficial questions, how do we expect them to ask deeper and more fundamental questions, a prime requisite for expansion of human knowledge. The education foundations of our society are being increasingly eroded by a rising tide of mediocrity that threatens our very future as a nation and as a people.

Growing Divisiveness

State Governments' dominating control over universities and colleges through funding mechanism and their total lack of appreciation of the need and importance to promote and nurture a dynamic, vibrant, forward looking, adventurous and competent system of higher education tends to promote linguistic chauvinism and parochial attitudes. Instead of identifying and focussing on unity in diversity, we tend to promote divisivity in basic unity. The mosaic of regional cultures, the various strands that emanate in different regions constitute our rich national heritage and culture. This totality of national culture should be recognized and reflected in our universities more than in any other institutions. The over-emphasis on regional languages, inbreeding in terms of faculty recruitment, reservation of seats, overzealous safeguarding of the sons of the soil all militate against national integration.

Rising Unemployment

The over-expansion of the system succumbing to local pressures and demands, without allocating enough resources and without modernizing curricula and syllabi turn out in increasing numbers unemployed and unemployable graduates and postgraduates leading to staggering unemployment. The number of persons registered with employment exchanges has exceeded 300 lakhs in 1986. In 1987, almost 20% of 1,67,35,362 educated unemployed were graduates and postgraduates. It is time to warn that ironically enough education itself can bring the ruin of a nation unless education and production are brought closer to each other each reinforcing the other. In India, education developed and grew independently of the growth of industries which were essentially set up and continue to do so on the imported know how. Without linkages between education on the one hand and commerce, industry, agriculture on the other, expansion of education merely implies increasing number of job seekers without corresponding increase in the number of jobs. The whole system seems to operate against the interest of rural villages. It is essentially relatively bright students that are sent by their parents in rural villages at tremendous sacrifice for higher education. These boys and girls go to the neighbouring colleges which do not have qualified staff, adequate infrastructure and other facilities. They struggle under these difficult conditions and after a few years obtain their degree through fair or foul means. After having obtained a degree on the courses ostensibly taught and learnt and with no relevance whatsoever with the needs of rural villages they move over to the cities in search of a white collared job firstly because he feels that the villagers from whom he has emerged are inferior to him, secondly because he feels diffident to go to the village and tackle the problems in the villages, and lastly, because he feels that by securing a job in the cities he can avail of the modern facilities and enjoy all types of consumerism. However, being inadequately qualified and totally unemployable, he does not get a job, becomes frustrated and ultimately becomes a source of social tension and strife. Their numbers are increasing very rapidly and is causing tremendous concern. In the final analysis, the individual students suffer, the parents who educated their children at great sacrifice not only suffer but almost lose them, the village gets depleted of the talent and ironically enough all this happens because of education.

In the contemporary situation, the universities must explicitly recognize and foster as its two basic aims, namely, (1) imparting knowledge, and (2) imparting a sense of responsibility and commitment to the community i.e. willingness to use knowledge for economic and social betterment. The world today has a stock of knowledge which is unmatched in its extent and power, but there needs to be comparable sense of dedication and responsibility to use this knowledge for the service of the community and mankind. It is universities which should provide focal points for importing science and technology from where it is in abundance and transmit it to local community. They alone or at any rate much more than any other institution must function as the ports of commerce in the great ocean of international science. They must act as powerful pumps drawing science and technology from advanced countries and creating some more in the process and spread it to irrigate the native soil. If the universities are to truly serve the community then they must be close to the native soil, close to the poor and the needy. However, the situation in India is far different. By the time, a student gets his degree, he is totally alienated from the local soil, local problems and becomes totally indifferent to local needs. The situation in India is not much different from what Sir Eric Ashby described in regard to African University. Sir Eric said, "For an African, the impact of university education is something inconceivable to an European. It separates him from his family and village. It obliges him to live in a western way whether he likes or not. It stretches his nerves between two spiritual worlds, two systems of ethics, two horizons of thought. In his hands, he holds the terrifying instrument of western civilization - the instrument which created Jefferson's speeches, the philosophy of Marx, the mathematics and chemistry of atomic destruction etc. His problem is how to apply this instrument to the welfare of his people. But he has no opportunity to reflect on his problems. For one thing, the gap between himself and the people is very great-the universities and these graduates are isolated from the life of a common man in a way which has no parallel in England or the United States". In India also, the alienation of the university graduate from his local surrounding is almost total so much so that boy from a village on obtaining a degree leaves the village for a city, a boy from the city leaves for metropolitan towns and a boy from towns leaves the country causing brain drain all across.

Deteriorating sciences education

The National Policy on Education approved by Parliament in 1986 restates the pivotal role of science education in the context of development of scientific temper and economic development. There cannot be two opinions as to the need for establishing highly efficient and stimulating science education programmes so that growing needs of highly qualified and motivated scientists and technologists can be met effectively. Since independence, there has been a phenomenal growth in the enrolment in the science stream. The enrolment in the science stream was about 1,27,168 in 1950-51. This increased to 4,39,925 in 1963-64 to attain a level of 7,25,328 in 1986-87. Though the actual enrolment has steadily increased there has been a decline in the percentage of students opting for science. In 1950-51 32% students who passed the higher secondary examination enrolled in the science stream. However, this percentage decreased to 19.7% in 1986-87. It is not only the decrease in the percentage that should concern us but the fact that students offering science today constitute lower middle 19.7% in contrast to upper 32% in 1950-51. The dismal fact is that persons who do not get admission to professional courses gravitate to science not because they are interested or motivated but because they must do something and they do not know what else to do. It is this distilled left over residue that forms a major part of our higher science education enrolment.

The present system has neither the selectivity nor the atmosphere conducive to motivation. If our young kids were to see working scientists in the colleges and universities leading fulfilled lives with a high degree of job satisfaction, fulfilment of honest variety resulting from solid contributions made to science and technology, see sparks of creativity in action and dedication oozing out of such peers, many of them will be tempted to take science as a career and will make lasting contribution to science and technology. If, however, these kids see their teachers as they do plod away like cogs in a wheel, frustrated because they are not getting anywhere, indulging in escapism and ego gratification in the form of frequent travel, foreign trips etc., then even the motivated few will be repelled from taking science as a career.

There are a few more disturbing aspects of our undergraduate science education programme. Undergraduate curricula are rigid even in the best of places. Combination such as Physics- Chemistry-Mathematics, Chemistry-Botany-Zoology prevents a Physics student to enjoy the great excitement that exists today in life sciences and in turn it does not allow life science students to know and understand the basic physical principles which indeed underlie and govern the life processes. Similarly, the undergraduate science education programmes depend merely on chalk talk concept doling out uncorrelated information without bringing out the basic concepts and the basic unity of science. Demonstrations and classroom open ended experimentation have disappeared. Although, science is experiment based it is taught as prose or poetry. Further examination, laying as it does more stress on memory rather than on testing, (a) capability to analyse situations, (b) reason and logic, (c) comprehension, (d) creativity and model building capacity, (e) communication skill, skews the system.

Ironically, even during the process of teaching science, scientific outlook is discouraged. I have come across several examples, where the students working in a laboratory with faulty apparatus have gone to their teachers with their not so accurate results and have been rebuffed and sent back and asked to get results as good as other students. This encourages the students to cheat and to cook the results. Thus instead of teaching the students the scientific method which would examine the limitations of the apparatus and why apparatus is giving wrong results the teachers in fact force the students to take a dishonest short cut completely contrary to the spirit of science. In the process not only the students' ability to do that experiment is destroyed but his whole understanding of the spirit of scientific method is damaged. There are several such situations which militate against the development of scientific temper and scientific outlook.

Impoverishment of Universities and its effect on research

Prior to independence several eminent scientists such as Sir C.V. Raman, K.S. Krishanan, S.S. Bhatnagar, D.N. Wadia, Birbal Sahni, M. N. Saha etc., whose research contributions won acclaim all over the world and brought fame and name to the country, all worked in the universities. The centre of gravity of research activity, howsoever small was in the university system. However, after independence in our eagerness to grow rapidly, various national laboratories under different science agencies such as DAE, CSIR, DRDO, DOS etc., were all set out of the university system with no linkage whatsoever with the university system. Being relatively new and few these national laboratories were funded liberally siphoning meager resources in men and money from the university system. Over the years, universities that exist in terms of equipment, infrastructure, etc. between universities and national laboratories, need only to be seen to be believed. To give only one indicator, the budget of one science agency on parks and gardens is equivalent to the total budget of two universities put together. In the absence of adequate research facilities, absence of dedicated teachers, repetitive and imitative trivial research is undertaken at most of the places. There are of course some very notable exceptions where front line research in various branches of science is pursued extremely cost effectively. Barring these exceptions, research carried out at most places is trivial, repetitive and imitative. It neither broadens the horizons of human knowledge nor does it lead to techniques and technologies. Prof. Rais Ahmad's recent study on research carried out in universities is an eloquent commentary on the state of affairs. The shelves of the university libraries are littered with unpublished theses, project reports, and research papers of very little use to any one else. This is the picture not only in relation to science but portrays the state of affairs all across the board, the situation in social sciences being even worse.

In the context of exponential increase in knowledge connected with science and technology, ever decreasing time of obsolescence and every shrinking of the time gap between a major discovery and its commercial exploitation, the separation of teaching and research can at best be a temporary strategy but cannot be a permanent configuration. We must realize that when resources are meager, it is prudent to plough them in the universities which have an inherent multiplier effect. To my mind, one of the gravest mistakes in our planning process has been the neglect and impoverishment of our universities. In the absence of wherewithalls, the productivity of the research activity in the university system is low and understandably the universities are unable to promote meaningful industrial and economic growth. It is no wonder therefore that in India there is hardly a professor who is a consultant to an industry or hardly any process has gone from the university research laboratories to industry for commercial exploitation in contrast to the developed countries where it would be difficult to find a professor who is not a consultant to an industry and wherein the industrial growth can be traced to the research carried out in the universities. We must realize that the education system is like a mighty Ganga, whereas research laboratories, industries etc. are canals which owe their existence to the mighty river. It is in the interest of the beneficiaries namely the industries, research laboratories, commerce, government and indeed of the entire country to see and ensure that the mighty Ganga is allowed to flow unpolluted without interference or obstruction. I would like to make a fervent plea to rebuild our universities so that they turn out boys and girls equipped with skills and knowledge and who have right types of attitudes and outlooks. Today, the universities in India are like sick industries with massive capital investment and large recurring expenditure turning out unsellable products. It is time we ponder over the low productivity of the universities.

Modern India is brimming with young people full of vitality, talent, enthusiasm and aspirations. This is our most precious resource. It is a fundamental right of these young people to go through an educational system which motivates them in the right direction, trains them and prepares them for the future. It is our duty to provide them with such a system. May I humbly say that the present conditions are completely contrary to this. Our young people emerge out of the universities as frustrated individuals who are disillusioned with their surroundings, fearful of their future and with no sense of confidence or direction.

II. THE PRESCRIPTION

Some Novel Initiatives to Improve the Situation

More criticism of the university system and wailing over the state of affairs in the universities will be of no avail and would lead us nowhere. It is high time that we apply our mind to the fast deteriorating situation, analyze the problems and collectively evolve a strategy to make the universities effective instruments of national development and social transformation. In this context, may I humbly submit some of the steps that I had initiated when I was Vice Chancellor of the University of Poona. These involved forging links between university on the one hand and industry, commerce, agriculture and other productive agencies on the other hand, evolving closer interactions between university departments and related national research agencies or Government departments, inducing Government to establish national research agencies and institutes on the campus, improving academic atmosphere by instituting academic forum, strengthening links with past students by establishing alumni association, evolving interdisciplinary culture by grouping departments into schools of studies etc.

Know Your University and Own Your University

In order to forge sustained and fruitful interaction between university on the one hand and industry, commerce, agriculture and other productive agencies on the other hand, we launched in collaboration with representatives of industry, commerce etc., a movement which was called, **"Know Your University and Own Your University"**. The aim of this movement was to initiate, sustain and promote a dialogue between university faculty and the representatives of industry, commerce etc. Unfortunately, in India unlike in developed countries, the industries and universities have grown independent of each other and without any links whatsoever with each other. The industries, commerce etc. are unaware of the competence in the universities and the university faculty is ignorant of the problems faced by and constraints on the growth of the industries. The response to this appeal issued jointly by the university, industry, commerce etc. was both spontaneous and overwhelming. Visits of the representatives of the industries, commerce etc. to the university departments and in turn the visits of the university faculty to some select industries were organized. This led to a better appreciation of what university departments can do and what industry and commerce needs. Interestingly enough, this dialogue led to clearer understanding of the constraints on the growth and performance of industries and what students and teachers from the universities can do. The constraints on the growth of small scale industry were identified asunder:

1. The small scale sector does not have adequate test certification and quality assurance facilities. They need both developmental and performance testing as well as advice and guidance.

2. Technologically oriented small scale industry, manned by bright young engineers desire to diversify and have indeed very good ideas and tremendous potential. However, because of the lack of developmental infrastructure, they cannot translate their ideas into industrial products.

3. There are very bright boys in the university. They carry out some very novel and innovative work. However, they are not aware of the application of this work for industrial production and economic growth. Being unaware, their work ends up in a paper or at best in a thesis but not in economic growth.,

4. There are a large number of Indians from the region who are doing extremely well abroad,. They wish to duplicate their operations in their hometown or nearabout with the help of their relatives of friends. In this case, the technology flows freely but even to adopt this technology to local skills, local materials etc. some amount of adaptive research work is needed. In the absence of any infrastructure of this development, this avenue of growth is also not availed of.

5. In technologically oriented small scale industry, there is a continuous effort needed to update both the competence of the workers as well as the technology. In the absence of the facilities for both these, small scale industries do not grow.

Science and Technology Park

In order to overcome these constraints, a series of meetings were arranged and as a result of detailed discussions, it was decided to establish science and technology (S & T) park. The objectives of the S & T Park are (1) to establish a facilities centre which will include test and certification facilities, developmental infrastructure etc., (2) to broaden and raise the level of small scale sector by induction of modern technology, (3) to make available to the industries the results of novel and innovative work being carried out in the university, (4) to undertake short term, well defined training programmes for persons sponsored by the industry, commerce etc., (5) to develop and promote entrepreneurship among young boys and girls so that instead of becoming job seekers they become job creators, (6) to provide consultancy in various areas where competence exists, (7) to make available the infrastructural facilities of (a) computer, (b) language translation facilities, (c) library facilities, (d) audio,video recording facilities etc.

The faculty and the concerned research students were given an incentive in the form of permission to retain 60% of the fees earned.

Of the remaining 40%, 25% were allowed to be retained in the departments and 15% went to the coffers of the university. This 25% served to improve the infrastructure of the departments.

During the short time, this activity has been in existence, it has performed remarkably well. One of the outstanding achievements of this activity was the use of high energy electron accelerator to tailor and fine tune the characteristics of power devices such as the turn off time, leakage current etc. BHEL, Bangalore and the Physics Department together evolved this technique. Every power device manufactured by BHEL was processed in the department. In this process, the industry benefited from the research carried out in the department and the university gained financially. The students working in the project got assured jobs. Incidentally, the Electronic Components Manufacturing Association awarded a prize for this work and the Department of Electronics agreed in principle to establish a national centre for electron irradiation of semiconductor devices.

The other remarkable development was the novel work related to surface modification using ion implantation, laser beam, plasma deposition, gaseous discharge etc. The University developed a unique method of modification of surface layers without altering the bulk to the desired specifications so that various surface sensitive properties such as corrosion, surface hardness, oxidation, wear, chemisorption etc., could be altered. These techniques have tremendous implications for the tool,die, and other metallurgical industries. Sandvik Asia, spring industry, blade and several other industries are taking advantage of these techniques.

Similarly, with the help of the industries, the University has been able to introduce microprocessor based instrumentation in electroplating industry, confectionary, and in several other industries. Many such examples can be cited.

In and around Nasik, Sangli, the cultivation of grapes is increasing very rapidly. One day, one farmer having learnt of our science and technology park came to me and asked me as to what could we do to help him. I was taken aback but after discussing with him for some time, it struck us that we could develop a process to convert grapes into Raisins, using solar energy. The process was soon developed and our School of Energy Studies set up a 10 tone/year processing plant at Nasik, 3 ton plant at Sangli. This spread like wild fire and the School is overwhelmed by requests for using these techniques in converting agricultural products into their value added products. In the process, the School developed techniques to extract oil out of groundnut without altering the shape of the nut. These techniques based on the use of solar energy are now being used to process sesame, figs, apricots etc. In our School, we have put a condition on our research students that each one must develop one commercial process during the tenure of his Ph.d. programme. This culture spreads like wild fire and departments compete with each other in turning out products and processes. Our School of Energy Studies is now self sufficient and operates on its own resources.

The School also developed the concept of integrated energy system for rural villages and operated it in a village Shirkoli. The village has all the facilities that are normally available in cities such as gas for cooking, electricity for lighting, pumping, radio and television etc.

Launching of Entrepreneurs

Besides, helping industries and agriculture, the University launched several young entrepreneurs giving them technological back up. One such concern managed by Shri Jogalekar, our student (INCONICS Ltd.) has flourished and is now exporting its products. One boy has set up a concern which designs, fabricates and supplies vacuum systems such as evaporation units, plasma deposition units etc. This boy gets technical back up from the University teachers. Several such instances can be cited.

University conducted short term courses for persons sponsored by industries. In some cases these training programmes were organized jointly with the help of the industries.

Infrastructural services such as language translation, audio and video recording, computer software etc. are also made available to the industry. Our Modern European Languages Department conducts training programmes for persons sponsored by industry in speaking, regarding and writing of some foreign languages. This department compiled for the Department of Tourism a multilingual dictionary for use of foreign tourists. They render translation services and interpretation service to the industry. Our history department helps the Archaeology Department of the Government. Geology Department conducts training programmes for personnel from ONGC, IOC and State Government. Our Anthropology Department and Law Department helped the Police. Our Computer Department developed the computer software for use in Police Stations. Our Department of Defence Studies and Strategic Analyses prepares reports and analyses the strengths and weaknesses of our friends and foes. These reports are used by the relevant Govt. of India Departments.

Interaction with National Laboratories

In order to excite the curiosity of our students and expose them to the activities at the frontiers in their respective fields, we forged links with national laboratories, in various disciplines to conduct our educational programmes and to undertake joint research programmes. Th University of Poona and Tata Institute of Fundamental Research, Bombay jointly conducted teaching programmes at the M.Sc. level in Physics. National Chemical Laboratory and Department of Chemistry, University of Poona, conducts M.Sc. courses in Chemistry. M.Sc. Geology courses are imparted by the faculty from National Geophysical Research Institute, Hyderabad and the Department of Geology, University of Poona. Similarly, M.Tech. Courses in Atmospheric Physics are conducted jointly by Indian Institute of Tropical Meteorology, Department of Physics, India Meteorological Department etc. In teaching M.Sc. Biotechnology, the Department of Zoology of the University cooperates with National Chemical Laboratory, National Institute of Virology, National Animal and Cell Tissue Culture Facility etc. One can imagine the tremendous advantage that accrues because of such a cooperative effort.

Setting up National Facilities

We have been arguing at various fora that it was a grave mistake to set up national laboratories outside the university system with no linkages whatsoever and pleading that such national facilities should be set up on the campuses of the universities so that these facilities can be used by the students and teachers and experts from these national facilities could give course of lectures in the universities. I struggled for getting some of these facilities established on the Campus of the university. The facilities that have been set up on the University of Poona Campus are Giant Meter Wavelength Radio Telescope, Centre for Development of Alternate Computation, Inter University Centre for Astronomy and Astrophysics, National Bioinformatics Centre, National Animal and Cell Tissue Culture Facility. These national facilities have considerably helped in upgrading the academic atmosphere on the campus.

The University introduced the concept of orientation and refresher courses for college teachers for the first time in 1985. Indeed, the University passed a statute laying down that person cannot be confirmed as a teacher of the university unless he satisfactorily completes some specific orientation and refresher courses. This concept was then taken over by the UGC which led to the establishment of Academic Staff College.

Alumni Association

Simultaneously, some novel and innovative steps were taken to augment the resources of the university and move in the direction of making university self sufficient, for we sincerely believe that university autonomy has no meaning unless universities are financially self reliant. One of the most effective steps in this direction was the establishment of Alumni Association. There are a number of past students of the university who are doing extremely well in this country and abroad. They are emotionally attached to their Alma Mater and are prepared to help the university if they are approached properly. We could within a span of three years institute three chairs out of the endowment thus created. This is one source which Indian universities have not yet tapped.

The University attracts and rightly so a large number of foreign students. These foreign students from affluent countries can afford to live luxuriously and there is no reason why they cannot be charged differential fees. This is the practice in almost all the countries, even in the USA. We introduced a scheme whereby a foreign student pays US $ 300 to appear at an eligibility test for admission to the University. There is nothing immoral about this as the foreign student deprives a local student of a seat and there is no reason why his education should be subsidized by us. Through this one single step, we get roughly Rs.40 lakhs a year.

Applied and Short Term Courses

In order to reduce the problem of unemployment we adopted a multipronged drive. A close interaction with industry, commerce, agriculture and other productive agencies not only led to making education more relevant but enabled the absorption of our students in these productive enterprises. Simultaneously, we introduced a number of applied courses such as B.Sc. (Applied) Electronic Science, B.Sc. (Applied) Bio Medical Techniques, B.Sc.(Applied) Computer Science etc. These Applied Courses are job oriented, self sufficient and very popular.

We introduced a scheme whereby a student offering a three year degree course takes one certificate course every year according to his convenience and choice. These certificate courses are one term courses, heavily biased on trades. We drafted some 140 short term courses such as Plumbing, Radio and TV Repairs, Computer Maintenance, Medical Technician, Soil Testing, Electric Wiring etc. In case, after the degree course, the person does not get a job, these certificate courses enables him to stand on his own. Besides, the student learns skills as well as learns to work with his hands and gains confidence. This, apart from anything else, helps in improving his personality. Not only these certificate courses are self sufficient but they are a good source of revenue for the colleges.

Interaction with Society

Finally consistent with our philosophy that university must lead the society and society must sustain the university, we organize an open meeting of the leaders in various fields such as economists, sociologists, scientists, industrialists, mediamen, lawyers, doctors, administrators etc. wherein the University presents its plans and programmes and discusses the problems it faces. In turn, the leaders in society give constructive suggestions and also help and provide assistance. To my mind, such meetings are extremely helpful in creating social awareness amongst the students and teachers, and in introducing a sense of accountability.

Simultaneously, we introduced a system of Academic Forum where once a week an eminent person describes the latest developments in his field and presents the likely trends in that particular area. These discussions at Academic Forum are extremely lively and help expose the students and the faculty to the developments on the frontiers of various disciplines.

I believe, universities constitute a tremendous strength, enormous competence, staggering potential. Unfortunately, we have never tried to exploit it and in absence of its productive manifestation, the system tends to deteriorate. Secondly, there is no unique way of introducing dynamism, of promoting excellence, of making universities self reliant. However, some conscious efforts are called for in this direction.

PRODUCTIVITY IN UNIVERSITIES

S. Ramani*

Definition of Productivity

Broadly, Productivity is defined as the "measure of economy of means". Operationally it is defined as the ratio of output to input.

Measuring Productivity

Galileo Galilei (1564-1642) showed men of science that weighing and measuring are worthwhile. Isaac Newton (1642-1727) convinced his colleagues that measuring is a necessity for progress and knowledge. Hundreds of scientists, mathematicians and inventors could not have made their contribution to mankind without measurements. In a world where nature creates nothing to a standard size, man, since the earliest times, has used his own body as the basis for measurements, (e.g. rules of thumb, foot, palms, fingers, etc.) but there were always problems and confusion about units of measurements, standards of weight, volume and capacity, input and output measurements.

Only during the French Revolution, 1791, 12 scientists worked against the iron hand of tradition and introduced the metric system, the first measuring system based on logic rather than physical accident. The introduction of a metric system, or the basic decimal principle of the metric system was used in China long ago, but it was the French Revolution which gave birth to three significant reforms in measurements. It launched the metric system, reformed the calender, and changed the unit of time.

Today, nearly 200 years later, we still have not reached worldwide uniformity.

Measuring achievements and results must have an underlying philosophy which supports the understanding of people, the basic principles of economics and makes a contribution to new knowledge and progress of the work unit,the enterprise and/or the nation as a whole.

Improved efficiency and higher productivity are worthless unless the inventiveness and human efforts involved are directed to the benefit and betterment of all involved. We have to develop a productivity ethic similar to the environmental ethic.

It should be stressed that we try to measure the productive effectiveness of the organisation or section and **not** that of an individual employee or group of employees.

Total Performance Management

This approach is a unique combination of industrial engineering and behavioural sciences. Of late, scientific managers have increasingly turned to behavioural sciences to measure and improve productivity. We can use productivity measures and data on employee/student attitudes in combination as well as data about student satisfaction. One can obtain a more realistic picture of the performance problems and potentials of the organisation.

Systems Approach - A Case Study of IIT

A current national imperative is the development of clearly stated goals and a coherent set of policies to steer higher education. A look at some of the problem areas will impress on the need for a "systems approach" to this problem.

The generation of new knowledge is changing from linear to exponential, owing to a knowledge explosion. Dissemination of knowledge with special reference to continuing education has become important.

Instructional costs are rising, making it difficult for small and private colleges. Greater attention appears to be paid to policy formulation rather than policy implementation in higher education. Communication between proposers of legislation and representatives of higher education in the country must be effective in order to effectively commit the resources to higher education. Wasteful and onerous regulations will have to be modified in order to meet in quality, quantity and variety of the societies' need for teaching, research and innovation in education.

**Director, National Institute for Training in Industrial Engineering (NITIE), Vihar Lake Road, Bombay–400087*

The philosophy of a system designed to produce an educated person has been stated as follows: "A college education should be an experience, not a happening" meaning thereby that the students should be able to understand the fundamental facts and principles, think for himself and learn himself.

Construction of a Model

Figure 1 is an attempt to construct a gross model of the IIT (or similar) higher education system. This is self-explanatory.

Quantification of all the variables is not always possible in the modelling effort. The more easily quantifiable factors are hours of lecture and research, student population levels, square feet of building space, faculty hours, unit cost of resources etc.

Some of the less tangible variables are prestige factors, quality of faculty, job opportunities for graduates, social and scientific urgencies etc.

Such a model as above could be put to a variety of uses such as input-output studies, resource allocation, programme planning and budgeting etc.

However, a more refined model in terms of the systems concept applied to a particular educational system is shown in figure 2 and figure 3. A typical approach goes through the phases of analysis, synthesis and evaluation to develop a successful operation.

A logical starting point in the design of any educational system is an examination of its basic philosophy and basic objectives. The primary activities are lectures in classrooms by the teachers, reading assignments, home work, laboratory exercises, examinations etc.

The basic philosophy and objectives must be subsequently translated into specific objectives for specific courses. The books by Bloom (Taxonomy of Educational Objectives) and Wheeler (Curriculum Process) and Mager (Preparing Instructional Objectives) throw considerable light into this phase of the educational system design.

The content performance objectives must be established and evaluated. To a large extent, the content performance objectives dictate the materials, process operations and evaluation techniques that will be used in the systems design.

Application of Systems Analysis to an Engineering Curriculum Design:

An excellent illustration of the application of systems analysis to the design of an engineering curriculum is by Melvin B.Kline and Molvin W.Lifson in the journal of systems engineering (Vol.12,Nos.1 & 2). The authors have defined the term design, identified its methodology and applied the methodology to the synthesis of graduate and undergraduate design courses.

In the above papers, the authors have defined the system life- cycle, which originates in the perception of a need and terminates when the system is retired as obsolete. The planning period, the acquisition period and the use period of a system have been analyzed.

During planning, the need for the system is verified, system concepts formulated, and their feasibility and worthwhileness established. The output of the planning period is system identification and a set of system requirements.

The acquisition period includes all those steps necessary to design, test and evaluate the system, produce and install it.

The use period consists of those activities required to operate, support and maintain the system; to periodically update or improve the system, and to finally dispose of it. The author has divided the phases as follows:

1. Planning period
    a) Concept Formulation
    b) System Definition
2. Acquisition period
    a) Design
    b) Production
    c) Installation
3. Use Period
    a) Operations
    b) Support
    c) Modification
    d) Retirement.

Systems engineering is concerned more with periods (1) and (2) above. The third period is styled as "sustaining engineering".

Model of Curriculum Design Process

The above authors have adopted the following definition of design, developed at UCLS:

"Design is defined as an iterative, decision-making process for developing engineered systems or devices whereby resources are optimally converted into desired ends".

The key words and their implications have been tabulated as follows:

Key word	Implication
1. Desired ends	Need
2, Resources	Inuts
3. Systems or devices	Outputs
4. Process	Transformation (Synthesis)
5. Optimally converted	Criterion of worth, constraints, analysis, evaluation, optimization
6. Decision-making	Choice (Evaluation)
7. Iterative	Feedback (Optimization)

The authors have successfully combined the life cycle with the design process into a matrix to provide an operational description of systems engineering.

Some Precautions in the Application of Systems Analysis to Education

The educational system is very complex. The socio-economic problems of the educational system interact with problems of transportation, crime, public administration, economic development etc. Unless we are very careful in setting our objectives and designing around these objectives, systems approach may become ineffective. There are limitations in our ability to model the educational process, particularly at the level of student-teacher interaction. Further, setting of objectives at the college level can become complex.

The two essential components of an educational system are the student and the teacher. Where different teaching methods work well with different students, systems analysis may have its limitations if used without caution. Another limitation stems from the fact that group behaviour is different from individual behaviour and large group behaviour is different from small group behaviour.

The dangers of ending up with a more impersonal and standardized system have to be guarded in the process of applying the systems approach.

Universities and Productivity

Unless a university employs productivity measures which are meaningful for itself and for others in the educational system, it is in no position to assess its present or future level of efficiency. A productivity theme for each college and department is essential if the university administration is not to lose its perspective : Diagnosis, improvement, and measurement are three interrelated processes for any productivity improvement activity.

The main problems of implementing productivity measures in universities will be breaking with tradition. We have to define output in operational terms - Management, education, training, supervision, public relations, security, legal services, advertising, accounting, personnel services, fire services etc.

It is today possible to assess these services without qualifying them by using the Delphi method. However, success in using the performance indicators depends on the attitude of the staff to whom they are applied. Imposing poor and ill-prepared readymade schemes on the unprepared people invites non-cooperation and hostility.

Measurement of productivity in universities is difficult but not impossible. We do not try because it is too difficult. But they are difficult only because we do not try them. Efforts to measure productivity in universities must also help in the identification of corrective action. Moreover, a single productivity measure is only as useful as a single shoe.

Nobody likes to be measured in regard to his performance or knowledge - least of all, university professors. Therefore, motivation and creativity in regard to human efforts to create and disseminate knowledge is paramount. The quality-productivity connection is critical to measurement of university productivity. A consensus of opinion among educators, and principal decision makers in the educational and employment sectors is the answer to quantify quality. In the case of research and publications peer opinion and relevance to university and national goals have to be assessed.

The extent to which the university goals synchronize with national goals is crucial to the effectiveness rather than efficiency of functioning of universities.

In my opinion, it is the lack of creative decision making rather than routine decision making that hampers university productivity.

Suggested Productivity Yardsticks

The following four main yardsticks will be useful:

1) Physical productivity relating volume of output to volume of labour (man-hour) inputs.
2) Cost productivity relating volume of output to combined cost of factor inputs.
3) Value productivity relating the value of net output (value added) to teacher hours of input or teacher compensation.
4) Quality productivity based on consensus from users of the output of universities.

However, the yardstick excellence is difficult to define and measure. The spirit of a university structure is to encourage full scope for individual excellence. The focus is on the strength of man and what he can do rather than what he cannot do. For productivity through synergy, the energy turned out is larger than the sum of efforts put in. University management must be calculated to motivate excellence - particularly academic excellence. Rewards must be based on high performance. Salary system should never be so rigid as to exclude special rewards for performance over and above the call of duty. A rational promotion system based on proven performance. University leadership should lift a man's vision to higher sights, raise performance to a higher standard and build a student's personality beyond its normal limitations.

To focus on a minimum requirement is always to destroy people's motivation. To focus on the best that just can be reached by constant effort and ability builds motivation. Imagination and vision is even more important than ability in a university. The difference between an employee obsolete at 35 or a pioneer at 70 lies in his ability to change his attitude and vision. Creativity, an essential ingredient, can be nurtured by encouraging employees at all levels to participate in the aims and good of the university.

The Management of Productivity

While increased resources may be necessary, many immediate results in productivity can be obtained by making present resources more efficient i.e. by lifting the productivity level of existing resources. The use of scientific managerial tools and techniques is one of the most important methods of securing extra productivity. Educational retread is necessary for teachers and researchers. The team effort and approach will be the core of university productivity.

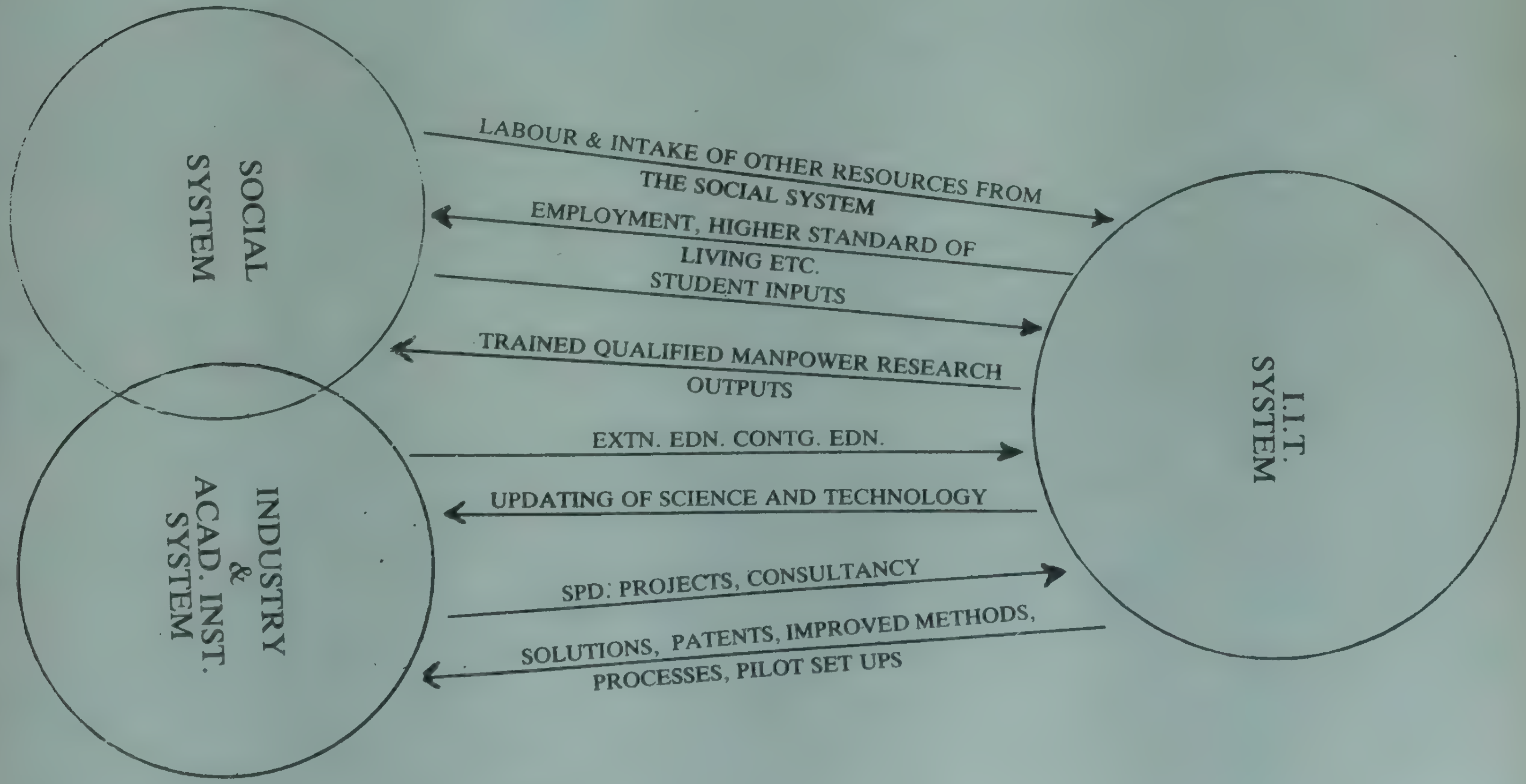
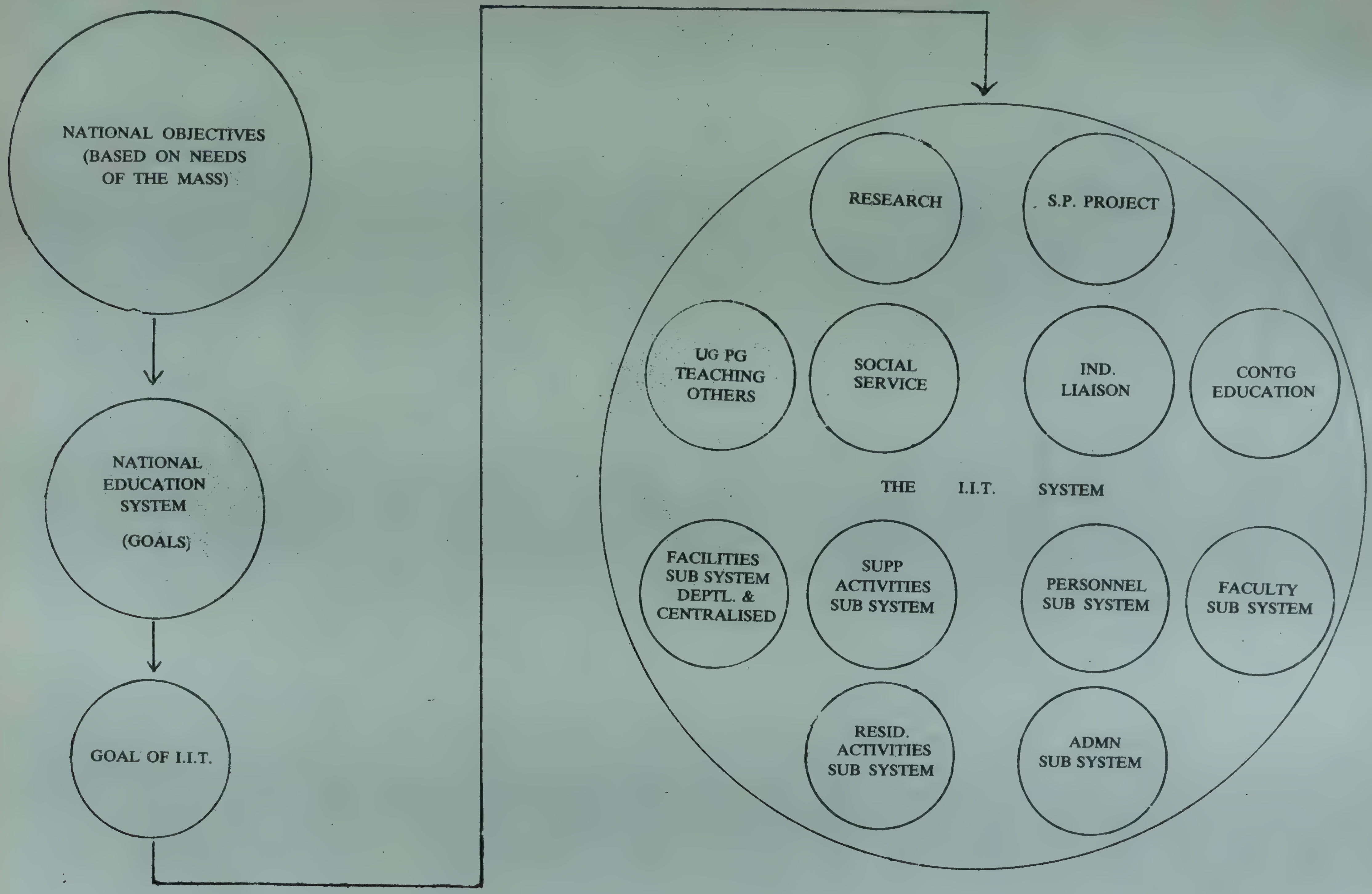
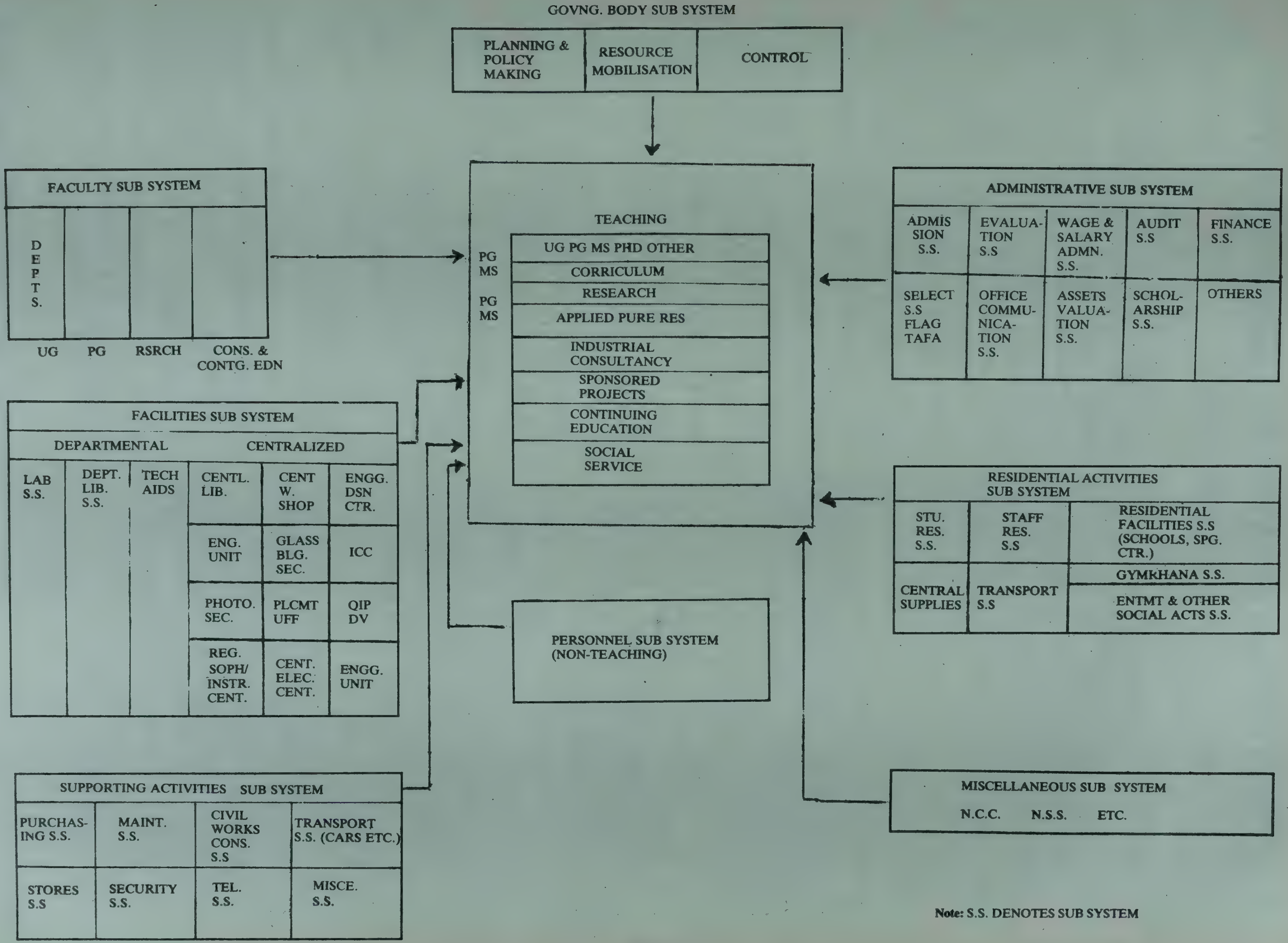

SOCIAL SYSTEM
LABOUR & INTAKE OF OTHER RESOURCES FROM THE SOCIAL SYSTEM
EMPLOYMENT, HIGHER STANDARD OF LIVING ETC.
STUDENT INPUTS
TRAINED QUALIFIED MANPOWER RESEARCH OUTPUTS
EXTN. EDN. CONTG. EDN.
UPDATING OF SCIENCE AND TECHNOLOGY
SPD: PROJECTS, CONSULTANCY
SOLUTIONS, PATENTS, IMPROVED METHODS, PROCESSES, PILOT SET UPS
INDUSTRY & ACAD. INST. SYSTEM
I.I.T. SYSTEM

FIG. 1


NATIONAL OBJECTIVES (BASED ON NEEDS OF THE MASS)
NATIONAL EDUCATION SYSTEM (GOALS)
GOAL OF I.I.T.
THE I.I.T. SYSTEM
RESEARCH
S.P. PROJECT
UG PG TEACHING OTHERS
SOCIAL SERVICE
IND. LIAISON
CONTG EDUCATION
FACILITIES SUB SYSTEM DEPTL. & CENTRALISED
SUPP ACTIVITIES SUB SYSTEM
PERSONNEL SUB SYSTEM
FACULTY SUB SYSTEM
RESID. ACTIVITIES SUB SYSTEM
ADMN SUB SYSTEM



Note: S.S. DENOTES SUB SYSTEM

FIG. 3

VS/

UNIVERSITY AND PRODUCTIVITY

Ramlal Parikh*

In recent years, there has been a growing concern to bridge the wide gap between education i.e. World of learning and the world of work. It is in this context that it is increasingly realized that the universities have to play a much greater role in the entire process of productivity in the nation. Ever since the University Grants Commission declared in the year 1978, that extension as the third dimension of education shall have equal importance with teaching & research, exploration for identifying linkages between education and productivity is widening. From this view, a series of activities are being envisaged to encourage participation in Socially useful productive work in the entire educational process of the universities. Long back Mahatma Gandhi had spoken very candidly on the imperatives of such linkages between 'Education and Productivity' in order to arouse a renewal of values towards integral relation between education and the world of work. He stated :

> "The baneful effects of absence of proper co-ordination and harmony among the various faculties of body, mind and soul respectively are obvious. They are all around us; only we have lost perception of them owing to our present perverse associations.
>
> Man is neither mere intellect, nor the gross animal body, nor the heart or soul alone. A proper and harmonious combination of all three is required for the making of the whole man and constitutes the true economics of education.
>
> By education I mean an all-round drawing out of the best in the child and man - body, mind and spirit.
>
> Useful manual labour, intelligently performed is the means par excellence for developing the intellect... A balanced intellect presupposes a harmonious growth of body, mind and soul... An intellect that is developed through the medium of socially useful labour will be an instrument for service and will not easily be led astray or fall into devious paths."

Gandhiji, thus, vigorously pleaded for reciprocal relationship between productive processes and education in every community at the grassroot level. In his approach to education and productivity, he laid stress on the harmonization of body, mind and soul, or in other words of hand, heart and head (3-H), for achieving inherent relationship between education and productivity. He was fully convinced that such a harmonization of hand, heart and head will tend to modify young people's attitude towards work and will ultimately promote better working links between general and technical education and the world of work and will eliminate the age-old rift between manual and intellectual work.

To make education a continuous and coherent process in relation to productivity, the learning process at all levels and particularly at higher education level should involve all in activities that promote and result in productivity both in terms of quality and quantity as well as relevant needs of the society. This should be the key element in the entire training and research system in the perspective of a long-term goal of harmonization of 3-H. It should not just prepare students for productive processes after the education, but should use productive processes for higher learning itself. Further, in order to promote free flow of knowledge and know-how, it will be necessary that those who are already in the productive processes should also have concurrent and simultaneous access to learning. This in turn, will also help in reinforcing the training and research tasks of higher education. The traditional role of universities in preparing trained manpower for organized industrial sector is now not at all adequate in view of the rapidly growing number of students in higher education. The rapid pace of change and expansion of higher education has created a social phenomenon which cannot justify its existence by limiting its role to a small section of our population in the organized sector. The universities must recognize the needs of large mass of our people, working as landless labourers, farmers including farm women etc. and in particular the needs of the most disadvantaged sections of our society.

**Vice-Chancellor, Gujarat Vidyapith
Ahmedabad-380014*

Higher education is now spreading rapidly in rural areas. This is an obvious outcome of the development process. But in rural areas, the institutions of higher education are far too less. As a result, the young people are driven to the urban agglomerations causing a serious brain drain to the Rural Society. The task is to meet the challenge of the development of rural areas by making higher education an instrument of social transformation. Migration of the rural youth to cities can be contained only by locating our specialized institutions of higher education in the rural areas. Over 76% of our people live in our villages. Education for them has to have its specific characteristics and indigenous requirements. Higher education, both formal and informal is one of the most important instruments of rural uplift and for the societal changes in the rural society. In view of this, it is of vital importance to identify organic linkages with the productive life of our unorganized sector. To enable education to fulfil its role for the unorganized sector particularly the deprived sections of our people, it is to develop sustained linkages of productivity with higher education in rural areas. This will lead to acceleration of grassroot development with increased capabilities of the people for innovations in the educational system as a whole as well as the life of the people. Such a process will also help in the emergence of several empirical fields of knowledge. This will also facilitate the access to education as well as its de- elitization. This will make it possible to remove its isolation as well as alienation from the mass of our people. It will foster to accelerate the process of social change.

In view of this, instead of remaining at the receiving end by reflecting the unjust and inequitable contemporary social structures, the need of the hour for the universities is to become pace-setters for social change through social action. The problems of widening disparities cannot be allowed to grow further if we want to sustain a peaceful society.

It is in this background that education should not support status-quo. It has to be a fostering agency. It should be an initiator and not just be the victim of surrounding socio- economic environment. It must be able to make a break-through in the status-quo. This means that the entire learning process, from elementary education to higher education, should be linked with locally relevant socially useful productive activities. The community education movement strives to think globally and act locally. This is precisely needed in our university system. There is urgent need to adapt to local requirements. This approach will ensure both enriching the education through productive activities and productive work being enriched through education. A radical change will take place in the mode of our learning process, the moment it is centred around productive activities. Dr. Kothari Commission had also commended the Gandhian view of integration of community life, and community service and productive work. This should be accepted and incorporated as universal components of education at all levels.

The question now arises, how should we do this? Today four million students are pursuing higher education. The time is not very far when the number will reach six million. In such circumstances, relationship with only organized industrial sector will be not adequate. It is quite obvious that vast masses will not come to the fold of organized sector as they are engaged in productive activities at their doorsteps either in primary sector of economic activities (agriculture, forestry, etc.) or in secondary sector (handicrafts, cottage industries, etc.). To say that this is not possible and practicable because of the prevailing economic structure in which we are conducting education, will be an alibi: Change in the socio-economic structure depends as much on initiatives from our educational system. The role played by higher education in development and social change is now clearly perceptible. Notwithstanding the different constraints to which higher education is subjected, it has to play a forerunner role rather than a feeder role. Whatever may be the inflexibility of the university system, even the existing syllabi can be taught by allotting thirty per cent of curriculum time thorough practical field work of productive nature. This will bring learners face to face with hard realities of empirical life. Since a widening gulf persists between the current state of knowledge and values and the content of curricula, the syllabi in all the subjects need to be revised and updated keeping pace with the exponential explosion of knowledge. It is not necessary to wait until changes are

(Cond. on page 30)

UNIVERSITIES AND PRODUCTIVITY

Rajammal P. Devadas*

Education in a Democracy

Education in a democracy is a life long process from the 'womb to the tomb'. It is the single most important, instrument of development. The Education Commission (1964-66), in its report entitled, 'Education and National Development' has maintained that for achieving 'Change' there is one and only one instrument, namely, 'Education'. Education empowers an individual with critical thinking and helps him to participate adequately in the society in which he lives. In a modernising society, democracy, science and technology, and industry form the bases for the complex of human interactions and relations. Such a society must aim at economic efficiency. For that purpose, it must coordinate the diverse influences of the various environments offered by the university system. Ancient India did evolve a system of education which facilitated the development of the full potential of the students. In that system, a judicious balance between refinement, sensibility, dignity of labour, ability for inculcation of values, creative expression and intellectual sharpening had been achieved.

Education is the principal medium for providing the skills required by the nation for its economy and technological and managerial efficiency in productivity. The contribution of university education to development and productivity shows itself significantly in the recruitment and employment of qualified individuals; in the ability of people to absorb and produce technological innovations and raise the level of productivity on the job. (Little, 1984)

Of the primary, secondary and tertiary stages of education, university education, which is at the highest level, is the most crucial, because of its leadership potentials at the apex. It is at this level, that all the generalists, professionals and specialists required for the key positions for productivity in business enterprises, research, administration, planning, education and politics are trained, through a variety of curricular programmes and offerings. Within the portals of the university and its affiliated colleges, the excitement of learning, the joy of creation, and the heat of debate and discussions generate intellectual energy, crystallise attitudes, and mould the personalities of their votaries. Through the leadership developed in the university, the cream among the educated assume their productive roles in different walks of life. The character and quality of education provided by the university will influence the creation of an ethos favourable to development, both individual and social. Since education increases competence, educated youth are a national asset.

According to Pandit Jawaharlal Nehru, "A university stands for humanism, for tolerance, for reason, for the adventure of ideas and for the search of truth. It stands for the onward march of the human race, towards even higher objectives. If the Universities discharge their duties adequately, then it is well with the nation and with the people".

Education is directly related to productivity, which involves cost effectiveness and excellence. More education will lead to increased productivity in all jobs in all sectors, everywhere. Higher education involves equipping the students with knowledge, skills, attitudes and values in an integrated manner for productivity. The eminent educationist - economist Professor V K R V Rao has stated: "Just as we cannot afford to have an ill-equipped or ill informed army with low initiative, we cannot also afford to have a vast number of graduates, if they are ill equipped or ill informed or lack initiative. Education is atleast as important as defence. In fact, it is even more important, because while defence is needed for survival, education is needed not only for survival but also for growth and development".

However, the educational programmes/strategies/technologies as practised today, are geared largely to imparting knowledge and memorising it, without regard for quality. They do not appear to impart the skills attitudes and values needed for productivity. Carefully planned indepth research studies and reorientation of educational patterns are required to enable universities contribute to productivity.

**Vice–Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, (Deemed University), Coimbatore – 641043.*

Objectives of University Education

In the Indian democracy, the major objective of university education must be the preparation of youth for participation in citizenship, in which all share equally the duties and responsibilities. The needs of the society for which education exists should be the focal point for formulating the major objectives of any university.

Education offered by the university includes the curriculum and teaching techniques - what is taught and how it is taught. Differences in social and political institutions are bound to influence the determination of the purposes of higher education. Hence the ends of higher education will be different in totalitarian, theocratic and democratic societies. Liberation of the mind and training of the hand, heart and head towards productivity are the ends/outcomes of university education.

The university must train the students to think rationally, which is basic for research and to appreciate moral and cultural values. The university, must facilitate the integration of the pursuit of knowledge and appreciation of skill. It should help to enrich technological courses by the study of human values. It should lay adequate stress on development oriented education. The goals of higher education are to be so shaped that the future citizen of India would be physically, intellectually and mentally a sound individual, able to contribute productivity to the building of a democratic and self-sufficient India.

Role of Universities Towards Development – Productivity

National development is growth plus change: change in turn, implies several qualitative and quantitative parameters: social, cultural and economic. Since India lives in more than 6,50,000 villages, a massive planned effort is necessary to make the rural population conscious of their rights to education and benefits of development programmes, in the absence of which, development cannot be materialised. A major task of reshaping and reorienting the system of university education is to adjust to the changing needs and aspirations of the people. The universities should chalk out plans for providing the type of education which is needed to weed out undesirable customs, traditions and outdated practices, and to eradicate poverty. Their programmes should help to accelerate economic, political and social productivity which will result in the overall development of the country.

Education should be conceived as human capital, which is the backbone of growth. Only income yielding knowledge can be termed as intellectual capital. Once created, its use by one individual will not diminish its availability to others. The university should become human capital, promoting directly the quality and capability of human beings, thereby facilitating their development. The university should produce a society with productive capacity to satisfy the material and non-material wants of its population. As human capital, education needs to serve by increasing the productivity of the labour force, providing subsistence to their needs, maintaining continuity in production and improving the efficiency of human being both skilled and unskilled. Specifically in the area of productivity, it should improve the quality of human efforts. (Saxena, 1988-89).

The economic dimensions of the universities should make them more and more aware of the cost factor in education. The dimensions of productivity in university education comprise the following areas:

1. Employment and Productivity,
2. Finance and Productivity,
3. Future technology and Productivity,
4. Labour and Productivity, and
5. Investment and Productivity.

1. Employment and Productivity

Economic development cannot be ensured by natural resources or capital investment alone. Development depends on the skills and attitudes of people and their institutions who constitute the base. Literacy helps to improve the quality of the workers and their techniques of production whether in cultivation of crops or production of goods in factories. Literacy promotes initiative and enterprise, which make for horizontal and vertical mobility towards an egalitarian society.

2. Finance and Productivity

India is in transition from a society in which education was for a privileged small minority, to one in which *all* are entitled to education. The immense resources needed for this massive programme of "Education for All" make it imperative that educational programmes are linked with productivity. When thus integrated, an expansion of education would lead to an increase in per capita income and Gross National Product (GNP). The additional income will then be used for additional investment in university education. Education and productivity thus constitute a 'rising spiral' whose different parts sustain and support one another. The availability of funds for financing new courses and innovations on teaching as well as expansion play an important part in productivity. However, such integration has not taken place to any appreciable extent in India. Therefore, the financial problem is very acute. The grants provided by the governments and UGC are just adequate to maintain the status quo. In order to obtain the finances required, vocationally oriented education must be offered to increase the productivity of the educational effort, and of the trainees concerned.

3. Technology and Productivity

In the field of technology, productivity is critical. In means, output per man-hour. It is influenced by a number of factors such as economic, climate, technological education, management and market. Man-hour productivity can be increased by technological revolution which refers to the pace at which new knowhow is applied. Man has now at his disposal, machines, power and the new systems of procedures that reduce much of his burden and increase his productivity per hour which is the outcome of many research studies undertaken by educational institutions. The obstacles in the area of technology can be overcome by producing more of engineers and scientist. Knowledge and skills, which are needed to apply technology are the outcomes of university education. Appropriate combination of knowledge with technology can result ultimately in a high level of productivity and production. Furthermore, an increase in productivity caused by the application of technological improvement can pave the way to combat inflation and thereby reduce the cost of production and spiralling of prices.

4. Labour and Productivity

Labour is a critical determinant of productivity. The quantum and quality of skill imparted by a university get enhanced and improved by the investment of the university in the area of human capital. There is ample research evidence to show that by teaching good nutrition to the labour force and helping them to practise desirable food habits, the incidence of sickness could be reduced and more productive individuals can emerge. University education increases mobility of labour and facilities the total absorption of the available skill among the working force. To acquire new skills and to increase productivity, subsidies need to be provided for the training programmes. In the training area, the universities can make magnificient contributions by designing the courses, teaching and evaluating them and appropriate follow up in terms of research and development.

A significant relationship exists between education, labour and the earning power of an individual. A literate person earns more than an illiterate because of his good quality of work which is nothing but the outcome of education. The break up of the population by their levels of education and occupation indicates that the percentage of qualified people, that is, those with one degree or teaching certification, is only 11 per cent as against 37 per cent of the population working in the organised industrial, government and service sectors, in India as can be seen from Tables I and II.

TABLE 1

Distribution of Population According to the Level of Education (1981 Census)

	No. in million
Total population	665.3
Literates	241.0
Primary	75.1
Middle	42.4
Secondary/Matriculation	28.0
Higher Secondary (include pre-university)	9.8
Technical/Diploma	1.4
Graduates and above	9.5
Others	74.0

TABLE II
Occupational Distribution of Population

	No. of million
Cultivation	92.5
Agricultural Labour	55.5
Livestock and Forestry	5.0
Mining and Quarrying	1.3
Household industries	7.7
Other industries	17.6
Construction	3.6
Trade and Commerce	13.9
Transport, communication	6.1
Other services	19.5

Source: Tungare, R.M. Planning Human Resources Development at Mass Level of Education, University News, Vol. XXVI No. 37, September 12, 1988.

A big gap exists between the supply of manpower and the demand for manpower in the emerging modern industry and service sectors. In addition to these sectors, skilled manpower and managerial staff are needed in the traditional sector of agriculture and related fields, to modernise them. These indicate the need for making optimum use of the resources allocated to university education and also matching the products of the university system better to the needs of the economy.

5. *Investment and Productivity*

There is a controversy whether education should be considered as a form of consumption or a kind of investment. If education is a consumer good, then it becomes the right of every individual to purchase the type of education in which he is interested. If education is perceived as an investment, it should offer returns in the form of productivity, especially in the technical and professional area. The concept of investment is justified because, the society receives the output and the outcome of higher education in the form of better services and greater production. Production of more trained and skilled technicians and professionals by the university system creates a climate favourable for growth. Capital formation, which is the initial process for investment, and which is the index of wealth- producing capacity of the economy, must be among the cardinal aims of the universities. Investment on science and technology creates good business, and will pave the way for the growth and development of the universities. Investment in transport education and power education can enhance productivity by means of the availability of social overhead capital. Thus in the field of investment, productivity is the main outcome that enhances the economic activity through greater efficiency.

Measurement of Productivity - Some Issues

Measurement of productivity poses a number of conceptual and operational problems. Earnings alone cannot be considered a reflection of productivity because it is a product of several other organisational factors, besides productivity, which education is supposed to improve. Furthermore, to measure productivity, the work needs and performance of particular worker groups must be taken into account. In the university education sector, where the product is intangible, it becomes still more difficult of assess productivity. The first problem lies in defining the output. What is the end product of a period of studies in the university? One of the peculiar features of universities is that they represent a multiproduct industry. Furthermore, the final product is intangible and at first sight incapable of being quantified. (Gupta, 1983)

While productivity may be measured in terms of earnings: wages and salaries, the real productive effects of education must be seen not only in salaried employment but also in non-salaried self employment. In this context, two questions arise: (1) Are the educated more productive? (2) Do earnings closely reflect productivity?

In relation to the university system, productivity may be considered in its two dimensions:

1. In terms of the efficient utilization of the resources allocated to the system, and
2. In terms of the contribution made by the university to the society at large through the productive and relevant manpower turned out by them and overall contribution made to the growth and well-being of the community and industry around them. (Mehrotra, 1982)

The second dimension is rather difficult to assess and can only be inferred from the set of indicators indirectly available.

1. Productivity in Terms of Optimum Utilization of the Resources

Productivity in the university system can be measured by assessing the following:

a. Defining and measuring all inputs and outputs in quantitative terms;
b. Identifying the variations in quality of both inputs and outputs and in expressing them in standard terms; and
c. Combining various inputs and outputs and estimating the relationship between the two.

Measurement of output can be attempted by an economic index or a cultural index or an academic index. Calculation of the economic index is a difficult proposition because of the lack of availability of data on earnings, existing income differentials and changes in income. There is problem also in equating the earnings or income of an individual to his or her productivity.

The difficulty with the use of cultural idea is enormous. The role of universities in developing cultural traits among their students is highly doubtful.

Therefore, calculating the academic index appears to be feasible. Normally, the end product is taken to be a 'Degree'. The number of graduates produced, the number of research degree holders emerging from the universities, the research output of the universities in terms of publications, the number of seminars/symposia/workshops organised, the type of outreach programmes conducted, the collaborative arrangements with industries/community, the consultancy services offered as also the cooperation received by the university from the larger society around it, could constitute some of the variables, representing the academic output of the university system.

Inputs in the university system are represented by the expenditure incurred in meeting teacher and establishment costs and other recurring and non-reeurring expenses. Measurement of these poses fewer conceptual problems. The perception, co- expenditure on the students, the student teacher ratio, the percentage of scholarships awarded, may be taken to represent the inputs in the educational processes.

Deliberations and research studies are needed to clarify the various indicators reflecting the input and output charges in the university system over a period of time.

2. Productivity in Terms of the Relevance of the University Activities to the Society

How far are the university trained graduates able to meet the work needs in the various working environments in the society? Do the graduates find placements which give them job satisfaction and enable them to contribute to the growth of the society? To find out these aspects, the universities should interact constantly with the employing agencies, the industry and the government, for revising their curricula and training methods.

In turning out graduates with a high degree of excellence and motivation, the attitude of the university/institution that attracts students from higher social origins and with higher personal achievement and desire and which gives a better academic environment for the students to excel, stands in sharp contrast to the medium and low level institutions which cater to the rest of the population with relatively low achievement and poorer facilities. (Khader and Singhal, 1983) The following issues must be taken into consideration:

Selectivity in admission procedures, social background of students seeking admission, their performance in the qualifying examinations, their personal desire for achievement and their grades in the final examination and placements after graduation.

Recommendations

In the light of the considerations raised, the following suggestions are offered to increase the effectiveness of the universities in terms of productivity.

1. Universities should be free from pressures and interventions, to chalk out their own programmes for productivity. They must change the curricular patterns to accommodate vocational courses and productivity features. The long duration required to become eligible for the first degree can be shortened, by suitable restructuring of the courses.
2. Research effort must be intensified and research scholars must be drawn from different educational institutions. Cooperation and collaboration between research centres located in different universities must be promoted. Encouragement and simplified rules and procedures for research would

attract better research scholars. For this purpose, research and innovations must be encouraged in the organised and unorganised sectors. Experimental scientists must be made available to the affiliated colleges.

3. Strong linkages must be established between basic sciences, technology and humanities on one hand, and between the employing agencies and the universities on the other.
4. Brain-drain should be curbed.
5. Choice of research problems should focus on the producitivity needs of the society and not dictated by considerations of easy publication in international journals. Interdisciplinary approach in research should be encouraged.
6. Transfer of Technology should receive attention in the educational programmes of universities.

Conclusion

Success in achieving the purpose of university education depends upon the productivity of the educational programmes offered. Such education should promote international outlook, better understanding, good attitude, critical thinking and efficiency. By inclulcating these qualities among the scholars, University education can contribute to national development.

The principles which govern the special privileges and responsibilities of the university system are: intellectual autonomy, broad political and philosophic neutrality, academic freedom, and the corresponding series of obligations to serve society's need for advanced education, for the development of new knowledge and understanding, and for helping the process of selective preservation and change. Critical to this role is the capacity for independence, reflection, and ongoing appraisal of society's needs and efforts, constrained only by the use of reason or vision. The modern university is not an instrument for solving society's multifaceted problems, but a provider of the tools, the language, and some of the alternative visions needed for society to explore new solutions. It is a resource for change, not a sponsor for particular movements.

The coming years will mark the following far-reaching changes:

> A world economic and political community whose members are increasingly interdependent and one in which no single power can play a dominant economic political, or military role.
>
> An environment in which science and technology play an increasingly important role both in the market place and in national security concerns.
>
> A pace of scientific development that requires increasingly close interaction between basic sciences and industry in terms of applied research and development.
>
> An increasingly diverse society requiring new understanding and commitments.

In such an environment, universities should play a critical role in national life. The strength and vitality of the universities will determine the leadership the country will exert. It is the obligation of the universities to the society that supports them to generate an adequate return on the capital entrusted to them. They should discharge the responsibilities to improve the productivity of their administrative and academic activities and to define their objectives carefully and selectively and set priorities among the objectives.

University education is for human development and for a just social order. Educationists must be alive to the issues, problems and crises facing the current generation and evolve suitable teaching, research and extension programmes, so as to meet the needs of productivity effectively and efficiently. □

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UNIVERSITY AND PRODUCTIVITY

P.N. Jha*

Introductory

Of late, the Indian universities and national institutes of higher education and research have increasingly become targets for the critics who maintain that higher education and research in the country has been fast losing its relevance to the socio- economic needs of the people. They maintain, in addition, that our system of higher education and research is lagging behind that of the advanced countries. Various reports have indicted even the national organisations like C.S.I.R, I.C.A.R, U.G.C. etc. and have charged them with spending money over non- productive and socially irrelevant projects. It seems imminent to focus attention on views thus expressed, and to prepare the university system to act without losing more time.

The present paper deals basically with aspects of productivity by the universities with particular reference to agricultural universities, in the context of national productivity. It also endeavours to identify the gaps and suggest measures to bridge such gaps.

Productivity

Productivity is a broad-based term, and in the national context an orchestrated effort from various agencies, including the universities, is essential. In this sense the universities *per se* are only a cog-in-the-wheel of a larger system. Moreover, in the context of the universities, productivity has to be considered subjectively, rather than objectively in terms of purely materialistic gains to the polity. The democratic and human aspects, as also the aspirations of the people are not to be lost sight of. The productivity of the university system needs to be judged on the basis of production of suitable men and appropriate technology and relevant knowledge; it needs to be considered against the backdrop of short, medium and long-term societal structure and demands. In relation to agricultural universities, productivity will have to be estimated by, in addition to the above criteria, the impact they had on increasing the agri-productivity. The contribution of the university system has been, and ought to be, substantial.

Productivity of the University System

It is common knowledge that innovations are the foundation stones of progress; without claiming monopoly, the universities indeed have contributed a great deal in giving the society innovative knowledge and skills.

Productivity, in the broad sense of the term, is perceptible when deviations from the existing trend of production -- either positive or negative -- occurs. Moreover, only a positive deviation is considered as a step towards progress. Thus, innovations are inevitable for a progressive society. However, innovations alone would die an unattended death if not supported and nurtured by skilled personnel with available base, material and sufficient infrastructural frame; progress occurs only on a solid and receptive base of the existing system. Hence, sustenance of the existing system is a necessity and for this also there is the need for forward-looking personnel. One of the major contributions of the university system is the production of such personnel.

Universities also work for updating knowledge developed globally, acting as channels of communication for the interflow of innovations, and adopting knowledge and/or modifying them to suit our own needs.

Knowledge *per se* loses its relevance unless it is appropriately disseminated for application to the benefit of the society. Universities, therefore, bridge the gap between theoretical and practical approaches and generate close interaction between the academia and the society. Extension and extension education in agricultural universities, recommended for all types of universities by the Radhakrishnan Commission to the New Policy on Education, are examples of successful application of knowledge.

Society and Universities

Indian universities, however, have failed in many areas. The fault does not lie with the universities alone;

**Vice-Chancellor, Rajendra Agricultural University, Pusa, Samastipur–848125* the whole socio- politico-economic situation is also to blame. Universities cannot, and do not, work in a vacuum; they influence, and are in turn, influenced by a number of forces over which they command no control. Another aspect that has not been highlighted adequately is that universities have to fight against time. On the one hand, there is the explosion of new knowledge alongwith unprecedented expansion and modification of the existing knowledge, and on the other there is the process of extraordinary socio-politico-economic change. To add to this there is the growing problem of population and pollution. With the advent of new societal forms and democratic demands, the university system is at a loss and, is, in many ways, confused. Further, in many cases democracy has meant 'averaging' of both skill and achievements. It can be realised that creativity does not necessarily depend on a democratic majority.

Another difficulty has been the lack of a system of effective coordination between societal demands and matching supply by the university system. It is true that such demand supply situations keep altering in a progressive society and, thereby, need constant monitoring. This aspect alone explains many of the existing debates. The university system, on the other hand, has also largely resisted constant experimentation, and thereby progress.

In addition, there is the growing problem of the inevitability of import of new knowledge and technology and an export of skill, commonly referred to as 'brain drain'. This is not a balanced barter. So long as our country lags behind in creating new knowledge, this phenomenon will continue to bother us.

The Agricultural Universities System

The agricultural universities system was established in India in 1960 and has, since then, expanded considerably during the last three decades. Agricultural universities are mandated with assisting in increasing the national agri-productivity. The Green Revolution is now common knowledge. It is also a fact that despite the population explosion during the last three decades, the self-sufficiency in foodgrains is, by and large, maintained. However, the sustainability in agricultural system is yet to come. Further there is a debate going on input-output ratio, the dangers of increasing pollution due to the increasing use of agro-chemicals, the regional imbalances and depletion of indigenous gene pools. The agricultural universities system is aware of all this and is constantly endeavouring to find necessary solutions to such short term and long term problems.

In spite of the above mentioned debates, the agricultural universities system has contributed a great deal in increasing national agri-productivity. This could be achieved because of some special features unique to agricultural universities. Continued regular monitoring and review of all aspects of agricultural universities by national bodies sponsored and coordinated by the Indian Council of Agricultural Research (ICAR) has created a situation in which these universities are progressively updated. Another unique feature is the very close and informal cooperation between these universities and their clientele - the farmers and agencies connected with agricultural productivity. A national grid of expertise and technology is maintained. Priorities in educational and research activities are decided by national bodies organised by ICAR in consultation with the universities and several other agencies. The extension education activities of agricultural universities help in disseminating new knowledge in field application in village farms to large scale agro-industries, thereby playing a pivotal role in increasing food production of the country.

Suggestions for Improving Productivity of Universities

In order to increase productivity of the university system, in the sense as described above, the universities must stand up to the challenges of the ever-changing and ever expanding demands of the society. Phasing out of pursuit of knowledge in rote and hackneyed areas of learning would be necessary. Diversification of educational and research activities befitting the globally changing scenario, albeit difficult must be initiated. Much of the researches are routine and of not much practical consequence. Research activities need be divided into three categories: first, research projects must concentrate on the immediate needs on a short-term basis. For this, identification of research areas and their prioritization decided by experts drawn from specific disciplines working on local issues would be necessary. Second, research projects relating to adoption of new knowledge created globally in order to modify and adapt to suit our purpose is necessary. Third, long-term projects which may create new knowledge in the foreseeable future are also essential. This third category of research may not yield immediate results but will be of great advantage to the nation in a global barter of knowledge and skills.

Lastly, taking the clue from the agricultural universities system, an extensive and truely effective extension system must be adopted by all the universities in order to disseminate and apply knowledge for the benefit of the people and particularly the rural poor of this country, and also to get regular and continued feedback for adjusting of educational and research priorities of institutions.

Conclusion

Universities have to be the leaders and one of the most important instruments of bringing the much needed change and progress in the society. These organisations can create and adopt knowledge and technology; but for actual field applications cooperation of other governmental and non-governmental agencies is required and a linkage needs be established. A system of close interaction between and active cooperations from all concerned is indeed, the essence of such an exercise. ☐

University and Productivity

(Contd. from page 21)

brought in the entire syllabi. Even the existing syllabi can be adopted with a new approach. Even preparation of project report in every subject will lead to viable linkage with the productive processes even in service sector. In the context of rural development, we must encourage students to prepare term papers or project reports based on empirical field work in such a way that it becomes a part of atleast the internal assessment. The students must be made to assemble socio-economic data and devise the necessary instruments for the formulation of development plans for rural areas. In addition to the training and research tasks of higher education, a series of extension activities will have to be encouraged through the socially useful productive work. This should facilitate educational policies and employment policies complementary to each other. Only then 'Right to Work' can be a real and meaningful proposition. Without linking of education with the vast and varied productive activities of the masses, how can 'Right to Work' be realised? In this, we should examine the educational experiments of the rural institutions like Gujarat Vidyapith, Lok Bharati, Gandhi Vidyapith, Vedchhi, Gandhigram Rural Institute, Sriniketan Rural Institute, Rajasthan Vidyapith, Banasthali Vidyapith etc. These institutes have given ample evidence of linkages between education and productive activities. The efforts made by these institutions have shown that to establish linkages between education and productive work is practicable and not a rhetoric. That such a linkage directly helps in raising the standards of education, hardly needs to be explained. Linkages of education and productivity are also needed for solving the problem of massive illiteracy in our country. Illiteracy is one of the greatest obstacles in the empowerment of our people. 'Right to Education' preludes 'Right to Work' and 'Right to Literacy' preludes 'Right to Education'. Literacy will have to be provided through peripatetic methods at the doorstep of those who have no access to the school. In the context of life long education, adult literacy is imperative for achieving both personal fulfilment and vocational development. One of the most important tasks of adult literacy movement is to prepare young adults for the exercise of their civic responsibilities and the management of community affairs. Through linking education with the productive activities, higher education system can play a very effective role in eradicating illiteracy.

It will also be worthwhile to mention that girls and women are still far behind in education and the proportion of girls and women even tends to decrease. For education of girls and women, linkage of productivity activities with education is essential. Their participation in educational process should be accelerated through suitable integration programmes of productivity at the grassroots. ☐

Human Development and Family Studies

A three day symposium on New Directions in Human Development and Family Studies was recently organized by the Department of Human Development & Family Studies (HDFS), M.S. University of Baroda.

The symposium attempted to bring together on a common platform experienced scholars in the field and the young generation of scholars to (a) articulate research needs in HDFS as relevant to the Indian context with special attention to gender issues, and (b) break out of the conventional paradigms and develop a fresh perspective, as well as (c) catalyze the upcoming generation of scholars to identify, plan and conduct researches that are socially relevant, shared and coordinated.

The specific objectives of the Symposium were (1) to assess the knowledge base available in the major areas of study in human development, namely, developmental psychology, early childhood education, child welfare and family studies; (2) to focus on gender issues in each of the above areas of study; (3) to identify the gaps in substantive content and the scope for refinement of existing methodology; and (4) to provide guidelines for future directions for strengthening the interfaces between research, social policy and programs in human development and family studies.

The symposium stressed that in order to promote the healthy development of the discipline, a conscious effort be made to focus on the following:

(a) the need on the part of the researchers for sensitivity to the Indian context and the socio-cultural milieu in which the Indian child grows;

(b) the need to identify, utilize and disseminate research literature on the development of the Indian child in context;

(c) the need to develop and standardize ecologically sensitive tools and encourage their use by research scholars;

(d) the need for greater interaction and face to face dialogue among researchers, program planners and policy makers especially in relation to child development;

(e) the need to develop alternative paradigms to investigate 'soft' areas of study in the field; such as identity and self esteem;

(f) the need for focussed attention on gender issues; and

(g) the need for sustained longitudinal research on infancy, socialization, ageing, developmental psychopathology and children with special needs, and growing up in crises situations (war, violence).

The participants also stressed the need for dissemination of information, peer review of research, inter-disciplinary exchange, use of multi-methods, improved graduate training, and above all the need for reflection and contemplation.

Twenty seven scholars representing human development allied disciplines namely developmental psychology, education, social work, pediatrics and clinical psychology from different parts of the country participated in the symposium. The states represented were: Tamilnadu, Karnataka, Maharashtra, Punjab, Union Territory of Delhi, Uttar Pradesh, Gujarat and Orissa.

World Congress on Social Psychiatry

The 13th World Congress of Social Psychiatry will be held in New Delhi in 1992. This is for the first time that a World Congress of Social Psychiatry will be held in a developing non-Western country. It will be the first world congress in any area related to psychiatry or mental health to be held in India.

The main theme of the World Congress will be the "Developing World and the Third Millennium".

Technology, ecology and mental health; Interface between futurology and social psychiatry; Psychosocial stress and mental health; and Drug abuse control in different cultures will be the sub-themes of the congress.

According to Prof. Vijoy K. Varma, Professor and Head, Department of Psychiatry at the Postgraduate Institute of Medical Education and Research who has been nominated President of the Congress, more than 1,000 prominent psychiatrists from all over the world, are expected to participate in the congress.

He said that as a rapidly developing society, India represented singular challenges and problems, perspectives and insights pertaining to the issues relevant to social psychiatry. In addition to the problems of rapid social change, industrialisation and urbanisation, India represented certain ethos and philosophy which were increasingly becoming relevant in the present world on the brink of threat of nuclear holocaust and technologically generated plunder of the earth's resources and poisoning of its environment. Professor Varma said in the present age more than technology and consumerism, we need ideas and philosophy, we need a wider, global and long-range perspective of our tenancy of the planet earth and to our inextricable and perpetual spiritual, cosmological and existential problems.

Among the prominent psychiatrists expected at the congress include Dr Jorge Costa de Silva (Brazil), Dr A.Guilherme Ferriera (Portugal), Dr John Carleton (USA), Dr Validimir Hudolin (Yugoslavia) and Dr Jules H.Masserman (USA).

The Challenge of Pollution

A one day seminar on "Pollution - A Challenge to Human Life" was recently organised at the Arulmigu Kalasalingam College of Engineering, Krishnankoil (Tamil Nadu). Dr. V. Shanmuganathan, Director, Mookambigai College of Engineering, Keeranur, Tamil Nadu, inaugurated the seminar.

Dr.S. Muthukumaran, Vice Chancellor of Bharathidasan University, Tiruchirapalli and Chairman, Indian Society for Technical Education, Tamil Nadu and Pondicherry sections in his valedictory address said that pollution could be divided into three major categories viz, solid pollution, liquid pollution and gas pollution. He explained in detail the sources of these three types of pollution like human waste, and exhaust gases and their ill effects. He said the remedial measures, when adopted, could convert the harmful pollutants into useful sources of energy. He narrated how the garbage which was a nuisance to the environmental hygiene was being converted into dry biomass cakes and used as fuel in various industries in USA and China. He also indicated how a useful substance for one cause could be harmful pollutant for another cause. He quoted the example of nitrogen which was a plant food applied as a fertilizer. The same nitrogen mixed with river water becomes a poisonous pollutant of drinking water, he said.

While speaking of the remedial measures, he suggested certain methods like encouraging the breeding of one type of bacteria which takes in carbon dioxide and converts it into oxygen. He insisted on the important role played by trees in purifying the atmosphere. Above all, he stressed on creating an awareness in the minds of people regarding the crisis of pollution and educating the masses of the ways and means of saving out environment from the pollution menace.

More than 20 papers were presented by scientists, professors and students of various engineering colleges from all over Tamil Nadu.

Travel Assistance for Attending International Conferences

The Indian National Science Academy (INSA) offers partial financial assistance to scientists to participate in important scientific International conferences abroad. The scheme is operated under three different categories viz., (1) For International conferences sponsored by the International Council of Scientific Unions (ICSU) and its affiliated bodies (ICSU Conferences); (2) For International conferences sponsored by other agencies (Non-ICSU conferences); and (3) For applicants who are interested in partial travel assistance only, for participation in any International conferences abroad. This is categorised as INSA-COSTED travel Grant.

Category 1: Scientist who has been invited to deliver a plenary lecture/preside over a session of a scientific conference or whose paper has been accepted for presentation, and who will also be provided maintenance allowance during his/her stay abroad and partial travel expenses by some agency, will be given preference over others. INSA's financial support, in case of selection is limited to a maximum of 50% international travel, 50% maintenance allowance for the duration of the conference and registration fee, wherever necessary. The prescribed application form duly completed should be despatched latest by January each year for consideration by a Committee of the Academy during the year.

Category 2: Scientist who has been invited to deliver a plenary lecture/preside over a session or whose paper has been accepted for presentation and who will also be provided maintenance allowance during his/her stay abroad and partial travel expenses by some agency, will be given preference over others. INSA's financial support in case of selection is limited to a maximum of Rs.7,500/- only. Applications for this category should be received in the Academy for consideration three months prior to the date of commencement of the Conference.

Category 3: Under this category the scientist who is interested to avail of partial travel assistance only, for participation in any International conference may send his/her formal request on a prescribed application form atleast three months prior to the date of commencement of the Conference. The applicant should fulfil the following eligibility criteria before sending his/her application:

(a) His/her age should be below 35 years on the date of commencement of the Conference.

(b) He/she should hold a Doctorate degree.

(c) His/her paper should have been accepted for presentation.

(d) His/her local hospitality and partial travel expenses have to be borne by the organisers or some other agency.

Candidates selected will be supported partially for their travel cost, jointly by INSA and COSTED (Committee on Science & Technology in Developing Countries). The applications will be screened once a quarter during the year.

Scientists interested to avail of financial support from the Academy for participation in International Conferences to be held during the year 1991-92 are requested to apply in the prescribed proforma. The proforma is available from the Office of the Executive Secretary, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110 002.

Tradition of Linguistics in Sanskrit

The Department of Sanskrit, Dr.Harisingh Gour Vishvavidyalaya, Sagar recently organised a three-day National Seminar on The Tradition of Linguistics in Sanskrit. The aim of the seminar was to explore the viability and relevance of Sanskrit tradition of linguistics. Inaugurating the seminar, Prof. V.C. Mishra, Rector and Actg. Vice Chancellor of the university, emphasised the interdisciplinary nature of linguistics and the need for development of comparative studies in this field through collaboration of various departments under the faculties of arts, social sciences or science.

Dr.Radha Vallabh Tripathi, Director of the Seminar and Head of the Department of Sanskrit, Doctor Harisingh Gour Vishvavidyalaya, Sagar, initiated discussions emphasising objectively the values and feasibility of various theories and systems represented not only in the schools of Sanskrit grammar, but also in various texts dealing with philosophy. Indian philosophers like Kumarila Shankar, Prabhakara, Dharmakirti and other Buddhist logicians were deeply concerned with the problems of semantics and the theories of word and meaning. A holistic approach therefore was necessary to understand the achievements and potentiality of this tradition. Dr. M.G. Dhadphade (Poona) and Dr.Pratapchandra (Sagar) presented a subtle analysis of the concepts of language and semantics in Buddhist traditions, while there were more than three research papers on the Nyaya School and its analysis of rhetoric. Some young scholars like K.C.Dash (Puri) and A.Dash (Sagar) came out with novel ideas on the use of Sanskrit grammar and linguistic tradition on computer.

Bharatidasan Centenary Year Celebrations

Mother Teresa Women's University celebrated the centenary year of the Tamil poet Bharatidasan on 14.11.90 at the university campus at Guindy, Madras. Dr. Tamil Kudimakan, Speaker of the Tamil Nadu Legislative Assembly, was the Chief guest at the function, while Dr. Jaya Kothai Pillai, the Vice Chancellor presided.

A 'Kaviarankam' on Bharatidasan's views on women, education and society was followed by the keynote address by Dr. Tamil Kudimakan. From a perspective that was almost kalaidoscopic, Dr. Tamil Kudimakan spoke at length on issues such as Bharatidasan's views on religion, education and women. He caustically pointed out that after five decades of independence India had not reached her self-proclaimed goals of good education, stable economy and a well structured society. So the foremost aim of every academic should be to practise and propagate greater levels of efficiency, and awareness. Research was useful only if it was rigorous and accessible to people at grassroot level, he opined.

In the memory and spirit of a great man who was at once a creative writer, a revolutionary and nationalist, if the women at Mother Teresa Women's University could take a vow to pursue meaningful research to fight and alter a biased society, it would be a salute to Bharatidasan, he said.

Prof Swaminathan Commemoration Lecture Award

The Indian National Science Academy (INSA) has instituted Professor S.Swaminathan 60th Birthday Commemoration Lecture Award out of an endowment of Rs.75,000/- by Professor S. Swaminathan 60th Birthday Commemoration Committee to commemorate Professor S.Swaminathan, a Fellow of the Academy, distinguished for his researches in the field of Organic Chemistry (Synthetic and Applied)

The selection of the scientist is to be made from amongst the persons who have made outstanding contributions in the field of Chemical Sciences. The lecture award is to be given once in two years. The first award will be made in 1992. The lecturer will be paid honorarium of Rs.10,000/- and TA/DA for journeys performed to deliver the award lecture. The award will be presented at the Annual General Meeting of the Academy or at a subsequent General Meeting when he delivers the award lecture.

The procedure for selection and other conditions of the award will be the same as for other Endowment Lectures.

News from AIU

65th Annual Meeting

The Association of Indian Universities met in its 65th General Session at Gujarat Vidyapith, Ahmedabad on October 8 and 9, 1990. The session was inaugurated by Shri Chimanbhai Mehta, the then Union Minister of State for Human Resource Development. Shri Chimanbhai Patel, Chief Minister of Gujarat was the Chief Guest. Dr. V.C. Kulandai Swamy, Vice-Chancellor, Indira Gandhi National Open University presided.

Prof. Ramlal Parikh, Vice Chancellor, Gujarat Vidyapith, in his welome address nostalgically recalled Gandhiji's association with the Gujarat Vidyapith as its life long Chancellor. Gandhiji took active interest in deciding the specific aims of the Vidyapith for transforming rural society of India through education wedded to non-violence, he said. Gujarat Vidyapith had completed 70 years of its exciting pilgrimage of education by training young persons in the context of social reconstruction of the rural society through programmes meant for the uplift of the rural and tribal communities. Prof. Parikh said that it was particularly appropriate that the Association should meet in its annual session at Gujarat Vidyapith in the International Literacy year for the Vidyapith was spearheading the mass campaign for removing illiteracy of 3 million illiterates of 15-35 age group from over 7000 villages in Gujarat. In an era of development, education cannot and should not be divorced from social development. It is imperative to make education as means to social development and vice-versa, he added.

In his inaugural address, Shri Chimanbhai Mehta said the prime task of universities did not end with preparing syllabi, imparting education and conducting examinations. They must ensure that the graduates were useful to society. It was for the universities to evolve modalities to utilise the student power for various social works during the long vacations of 180 days every year. Shri Mehta also pleaded for narrowing down the disparity in expenditure on higher education and school education. The average annual expenditure on a primary student in the country was just Rs.150/- whereas it was Rs.400/- for a high school student and Rs.500/- for a college student. The expenditure on medical or engineering students ranged between Rs.50,000/- to Rs.1 lakh. He wondered whether the medical or engineering students repaid the expenses incurred by the state for their education, in any fashion.

Speaking on the occasion Shri Chimanbhai Patel referred to the role of education in development. Education has helped in increasing farm output, productivity in factories and bringing about social reformations, but hardly 2% of the national income is being spent on education, he said. He called for discarding examination oriented system of education which only encouraged malpractices and had lost all relevance in the present day society. He appealed to the Association to reassess the present education system and find ways to create the right type of people for the right type of jobs. He stressed that the country's vast natural resources and manpower must be profitably utilised.

Prof V.C.Kulandai Swamy in his presidential address traced the weaknesses of the higher education system to poor management and said, "the lack of academic leadership in the affairs of higher education is the single most important weakness that needs our attention today". The problem of higher education was not numbers but of quality. The problem was of relevance and matching preparations with the needs of the economy, Prof. Kulandai Swamy added. He cautioned against pitting higher education and elementary education against each other and said that education for few at higher level was as important as basic education for all. (Prof. Kulandai Swamy's presidential address wa published in *University News* of 22 October, 1990)

Prof S.K. Agrawala, Secretary, Association of Indian Universities proposed a vote of thanks. He welcomed Shri Chimanbhai Mehta's suggestion for introduction of social work for students during the long vacations and hoped that universities would certainly evolve modalities and strategies for giving the suggestion a practical shape. He felt Shri Chimanbhai Patel's emphasis on the value of labour and work experience was most timely. He was in complete agreement with Shri Patel that alongwith the security of the tenure of teachers, there should also be established a system of accountability. Prof. Agrawala had a special word of thanks for Prof. Kulandai Swamy for guiding the activities of the Association during the course of his pesidentship with exemplary devotion, fairmindedness and vigour giving appropriate thrust to AIU activities. He recounted several achievements during Prof. Kulandai Swamy's presidentship that included improvement in physical facilities, instrumentation and sound financial prospects for the organisation. Prof. Agrawala thanked the hosts, Prof. Ramlal Parikh and his band of devoted workers for arranging hospitality with a personal touch and rare warmth, which only they were capable of offering.

A one day group discussion on 'Universities and Productivity' was also arranged on the occasion on October 9, 1990. Papers were presented at the group discussion by Prof. V.G. Bhide, former Vice Chancellor,University of Poona, Dr.S. Ramani, Director NITIE, Bombay, Prof. Ramlal Parikh, Vice Chancellor, Gujarat Vidyapith, Dr.(Mrs) Rajammal P.Devadas, Vice Chancellor, Avinashilingam Institute for Home Science & Higher Education for Women, Coimbatore, and Dr. P.N. Jha, Vice Chancellor, Rajendra Agricultural University, Pusa. All these papers are published elsewhere in this issue.

73 Vice Chancellors of Indian universities participated in the annual meeting. Prof. G. Ram Reddy, President, Commonwealth of Learning, Vancouver (Canada), Prof. Ahmed Ali Qureshi, Secretary UGC, Pakistan, and Prof. B.C. Malla, Vice Chancellor, Tribhuwan University, Nepal, also graced the occasion.

News from UGC

VCs Meet on Distance Education

The University Grants Commission organised a Conference of the Vice Chancellors of the Indian Universities on 10th October, 1990 at Gujarat Vidyapeet, Ahmedabad. The focus of the Conference was on promotion, coordination and maintenance of standards in distance education. The Conference was inaugurated by Prof. Yash Pal, Chairman, UGC who highlighted the importance of distance education in the country, which is a viable alternative to reduce the pressure on the formal system of education and at the same time will meet the societal demand for higher education. He stressed the need to develop an appropriate mechanism for maintenance of standards in distance education as the courses offered by distance education through correspondence courses as well as open universities in the country were viewed by the public either indifferently or somewhat inferior to the formal education system. The national concern, therefore, was to improve and maintain the quality of Distance Education. It would be appropriate to have flexibility in the working of universities by allowing interchangeabilityof students from correspondence courses to the courses in open universities and from open universities to correspondence courses, to make the distance mode of higher education more flexible and dynamic, he advised. In fact, the ideal situation would be that there is automatic interchangeablity between the distance mode of higher education and formal system of higher education, he said.

In order to exploit the open and distance system optimally, he underlined the need to coordinate the working of all concerned institutions through a system of networking so that the largest number of people could be reached in the shortest possible time at the lowest possible cost.

After the inaugural session, four Working Groups were constituted to discuss the following aspects:-

(1) Status of distance Education
(2) Promotion of Distance Education
(3) Coordination and Networking of Distance Education
(4) Maintenance of Standards of Distance Education.

The major points highlighted in the Status of Distance Education were the rate of growth and increasing demands on distance higher education, remedial measures for balanced growth of distance education throughout the country instead of concentration at certain regions, the strategy for encouraging women to participate in educationally backward states like Rajasthan, Bihar, Orissa etc., and diversification of distance education and introduction of distance education technique in correspondence courses.

The group on Promotion of Distance Education deliberated on various ways of improving the quality of correspondence and distance education as well as converting correspondence courses into distance mode. The group suggested that the distance education may be made more relevant to the needs of the society and should have flexible course structure which will facilitate interchangeability between the distance mode and the conventional system. The use of educational technology, networking of schools of correspondence courses, and continuous evaluation and certifiction were also discussed in detail.

The group on Co-ordination and Networking of Distance Education mostly deliberated on the manner in which an effective system of coordination and networking of the correspondence courses and open universities could be established for optimum use of resources and talents. This group considered three different models of coordination mechanism i.e. (a) to set up a Council of Distance Education, (b) National Open University Coordination Council; and (c) Cooperative Council on Coordination and Networking. It recommended a clearing house of information for courses offered through distance education and a body for evaluation of syllabi and teaching materials etc. It also suggested an appropriate mechanism for ensuring uniformity/equivalence in the course content.

The group on Standards of Distance Education was of the opinion that in view of the already existing organic connection between the conventional universities and the UGC it is desirable that UGC should play a complementary role in the maintenance of standards in the Distance Education sphere of the conventional universities. It also recommended that a cooperative committee on maintenance of standards be set up. The role of Indira Gandhi National Open University (IGNOU) in this area was also discussed and the group felt that this university could serve as a nodal agency in this regard.

Teacher Fellowship Scheme Revised

The University Grants Commission has prepared revised guidelines for its Teacher Fellowship Programme. Under the revised guidelines, during the Eighth Plan period the tenure of the teacher fellowship will be limited to a period of one year to enable a teacher either to do M.Phil. or complete his Ph.D. work.

Moreover, it has been decided to fix the quota of teacher fellowships in respect of every college on the basis of the strength of permanent teachers in case non-government colleges or teachers appointed on regular basis in case of government colleges. The Commission has also requested the Vice Chancellors of the universities to award fellowships on its behalf to the teachers of their affiliated colleges who satisfy the eligibility conditions laid down for the purpose including the selection procedure, to reduce the delay in communicating the acceptance of the names of the awardees.

A monthly living allowance of Rs.750/- will be admissible to a teacher fellow if the distance between the research centre joined by him/her and the college (place of duty) is not less than 40 kilometers, and also, if the research centre and the college do not belong to the same city. Besides, a teacher fellow will also be eligible to receive a contingency grant limited to Rs.5,000/- in case of humanities, social sciences and commerce subjects or Rs.7,500/- in case of science subjects during his/her fellowship tenure.

Countrywide Classroom Programme

Between 1st December to 7th December, 1990 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

1.00 pm to 2.00 p.m.

1. 12. 90

"Consumer Protection - IV : Right to choose"

"Career in/through Sports - I"

"Modern Art"

2.12.90

No Telecast

3.12.90

"Classical Mechanics – 10: Conservation of Energy & Momentum"

"Roads and Road Developments in India"

"Vermicopost - The might of the Small"

4.12.90

"There is a Craft - II: The Machine Story"

"Vocational Education For Women"

"Rasa-shastra - III"

5.12.90

"Inside PC (Personal Computer)"

"Delhi Through the Ages"

"Naming the Plant - I"

6.12.90

"Programming in PASCAL Language Session - I : Programme Structure"

"Evolution of the Himalaya"

"Tragedy - Aristotle to Brecht - IV"

7.12.90

"Simplification of Switching Circuits"

"Mental Illness - A Diagnosis"

"Waste Disposal"

2nd Transmission

4.00 p.m. to 5.00 p.m.

1.12.90

"Rasa Ranjita - Understanding Indian Dance - 4: Bharatnatyam - I"

"Career in Advertising"

"Fire Fighters"

2.12.90

No Telecast

3.12.90

"Classical Mechanics - 4 Newton's SEcond Law"

"In Conversation With Sir John Harvey Jones"

"The Pond"

"Organic Techniques - II"

"Methods of Physical Rehabilitation"

5.12.90

"Eye & Light Pollution"

"The Glory That was Baijnath"

"A World Apart, A World of Caves"

6.12.90

"COBOL - 4: Flow Charting"

"Paleolithic Society"

7.12.90

"Beyond Vision"

"Rapid Rural Appraisal - Learning From The Villages - II"

"Forest Policy 88"

We Congratulate...

(1) Dr. P. Dubashi who has been appointed Vice Chancellor of the Goa University.

(2) Dr. C.P. Malik, Professor of Botany and Dean, College of Basic Sciences and Humanities of Punjab Agricultural University who has been awareded the 'Birbal Sahni Gold Medal for 1990 in recognition of his outstanding contributions in the field of 'Plant reproducting biology.

News from Abroad

International Conference on Education

The 42nd Session of the International Conference on Education, was recently organized by Unesco's International Bureau of Education in Geneva. The theme of Conference was: The fight against illiteracy: policy, strategies and operational programmes for the nineties.

The Conference was very well attended; 123 countries were represented, and numerous representatives of inter-governmental and non-governmental organisations were also present.

The purpose of this International Conference, which took place six months after the World Conference in Jomtien, was to go beyond declarations of intention and to examine the practical steps which have to be taken, particularly at the national level, but also at the international level, in order to internationalize literacy training and basic education.

To this end, the Conference was organised along radically different lines by comparison with its predecessors. In addition to the plenary sessions, at which Member States described their general policies with regard to basic education, six working groups were formed, each group being responsible for examining a specific subtheme in greater detail and submitting its opinion concerning the numerous amendments to the final recommendation.

The Recommendation adopted by the Conference briefly recapitulates the general principles on which literacy training policies must be based: (i) a satisfactory standard of primary education, combined with adult literacy training courses and non- formal programmes for young people who have not attended school; (ii) close co-operation between the governmental and non-governmental sectors; (iii) more intensive use of the media; (iv) the involvement of local communities in the organization of adult training programmes; and (v) the adoption of systematic monitoring procedures.

But the main body of the text is given over to more practical proposals concerning the definition of course contents, and the choice of teaching and learning methods; the evaluation of the knowledge acquired and of more wide-ranging results at the level of the society in question; how to make literacy training functional; the training and retraining of teachers and other categories of personnel; and regional and international co-operation.

Financing of Higher Education

On the occasion of the 42nd Session of the International Conference on Education, held recently in Geneva the International Institute of Educational Planning (IIEP), Paris organized an informal meeting of Ministers on the subject of the financing of higher education.

Fifteen Ministers, Vice-Ministers and Permanent Secretaries attended this meeting which provided an opportunity for a fruitful exchange of information and experiences in an informal and essentially professional ambiance. They came from the People's Republic of Benin, Canada, Chile, the People's Republic of China, Ethiopia, the Federal Republic of Germany, the Islamic Republic of Iran, Malawi, Norway, Pakistan,Senegal, the Syrian Arab Republic, Thailand, Uganda and Zimbabwe.

The participants discussed three aspects of the subject:

(i) Recent trends concerning the allocation of public resources to higher education: As a consequence of the crisis and of structural adjustment, has higher education been relatively spared the axe, or not, as compared with other levels of education? What are the main reasons for the trends observed in this connection?

(ii) The apportionment of higher education costs; Many countries are currently re-examining, at government level, the apportionment of costs among the public sector, students and families, employers, and other sources of financing. What are the major factors influencing the manner in which costs should be apportioned?

(iii) The recovery of higher education costs: An important point in the discussion of the apportionment of costs is the possibility of recovering a part of them, either through tuition fees or by requiring students to pay for their accommodation, meals, etc. In many countries, the tightening of financial constraints has led governments to consider increasing the proportion of costs recovered from students by introducing or raising fees and contributions. This has been advocated for reasons of efficacity as well as fairness; but such policies may meet with strong opposition. What is the present policy of cost recovery and what pressure is brought to bear to change it?

One way of recovering a greater proportion of costs is to introduce loans for students to enable them to pay their fees, or as a substitute for grants. Do such student loans exist, or are they considered feasible, in your country?

What other forms of contribution, financial or otherwise, are required of students and graduates?

Those who are not in favour of student loans argue that they suppose the existence of a capital market discourages entry to higher education, and creates administrative and other problems (for instance, the high proportion of them that are not repaid). But international experience shows that loan systems can work effectively in some countries and can lead to economies in the long term.

What are the advantages and drawbacks of loans as a means of providing students with financial assistance? What are the major obstacles and objections to student loans and do you think they can be overcome?

The communications presented by the various speakers were extremely rich in substance and though they reflected a wide diversity of situations they may be consolidated under three main headings:

(i) The nature and magnitude of financial problems

Adopting different approaches to the subject, all the participants emphasized the existence of financial constraints -- in some cases very severe -- on the imperatives of broader access, higher standards, and greater equality. Though a very few countries seem to be committed to a policy of reallocation of resources in favour of primary education, this does not mean that they are giving less importance to higher education for the training of senior personnel and for the achievement of scientific and technical progress. Other countries stressed even more clearly the priority to be given to higher education and research. On the whole, the participants made it clear that what they envisaged was not a fundamental revision of the internal allocation of resources, but rather a readjustment of the balance of priorities combined with a better utilization of resources and a progressive evolution of the apportionment of costs.

(ii) The range of responses to the financial crisis

The options suggested by the Ministers can be grouped in four main categories:

Several countries have already set up, or plan to launch, distance education systems systems which should enable a fairly large and diversified target population to be reached at moderate cost (initial or on-going training for persons in employment or not). But no speaker mentioned evaluation in this connection, and it would certainly be worthwhile to disseminate the lessons learned from experiments already undertaken in various countries so as to specify objectives and target groups more accurately, improve training methods, determine the balance to be struck between distance training and face-to-face training and evaluate the various options concerning certification.

The encouragement of the development of private education was mentioned by some countries, some of which have adopted an explicit and active policy in this field. Though developing countries seem to envisage this policy mainly for financial reasons, certain industrialized countries regard it as a consequence of the rapid development of a demand for diversified and specific training on the part of business and industry, and linked with scientific and technical progress.

Various speakers considered that a greater contribution from business and industry was justified by the benefits which companies derived from the training of senior personnel. There is a wide variety of options in this field, depending on at least three considerations: (a) the nature of the contributions (salary tax, payment to the State of a contribution based on the cost of training the graduates recruited by the company, payment of a salary in advance to students bound by a contract of employment, organization and direct financing of training activities); (b) the activity that is subsidized (initial or in-service training) and on the area of such activity (e.g. research); and (c) the mechanisms of partnership between higher education and business/industry. The interest shown in this field would justify a more thorough exploration of the different forms of organization and of companies' contributions.

Lastly, the increase in tuition fees and in students' contributions to accommodation and meal costs are matters of widespread concern. Very many countries have recently introduced, or are considering introducing, a student loan system. Many speakers at the meeting referred to the problems involved in the adoption of such a concrete measure, and how to cope with them.

(iii) The appointment of higher education costs and student loans: problems of implementation

In the last analysis, the problems of implementation are of a cultural and technical nature.

How can the attitudes of students and families to cost apportionment and loans be changed, and how can they be persuaded to accept new "rules of the game"?

Two suggestions were put forward:

Make students understand in concrete terms that the cost of their education is borne by their community, and hence to a large extent by families whose income and standard of living may be very low.

Finance students' expenditure by a renewable fund fed in particular by the repayments of those who have completed their studies, so as to "put over the message" that those who have benefited from higher education may in turn enable others to enter that level.

Three technical problems were mentioned by several speakers:

If the family income is taken as one of the criteria of the attribution of a loan, can it be easily and reasonably accurately evaluated? Can declarations of income be accepted for this purpose; if not, what can replace them?

Should (and can) loans be offered by private banks, or is it up to the State to provide this facility? In some countries, private banks are reluctant to authorize loans for students because of the risk of non-repayment and the high cost of "keeping track" of the borrowers. Should the State then replace the private sector, or should it assume responsibility in case of non-repayment? Furthermore, when a loan system is launched, new funds have to tied up for a fairly lengthy period before repayments begin to constitute a significant proportion of fresh loans; this raises the problem of loan financing and the development of a capital market.

How can the number of payment defaulters be kept down, and how can the beneficiaries of loans be "kept track of", especially when people change jobs frequently or go abroad?

Compromise solutions can probably be arrived at in each national context where technical problems are concerned. However, success or failure in the apportionment of costs, and the introduction of loans, depends mainly on the relevance of the strategy adopted to bring about changes in attitudes to these issues.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctroal Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awareded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availablitiy note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in AIU Library during November, 1990.

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Dennison, W F and Shenton, K. Training professional leaders-the new school managers. **Oxford Rev Edn** 16(3), 1990, 311-20.

Maddock, Trevor. The relevance of philosophy to educational administration. **Ednl Admn Q** 26(3), 1990, 280-92.

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Wilbers, Stephen. Good writing for good results : A brief guide for busy administrators. **Coll Bd Rev** (154), 1989-90, 14-9,25.

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Lowyck, Joost and Elen, Jan. Self-study packages : Vantage points for a new instructional design. Intl J Ednl Res 14(6), 1990, 565-79.

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EDUCATIONAL RESEARCH

Neumann, Yoram and Finaly-Neumann, Edith. The support-stress paradigm and faculty research publication. J Hr Edn 61(5), 1990, 565-80.

EDUCATIONAL TECHNOLOGY

Salomon, Gavriel. Studying the flute and the orchestra : Controlled vs classroom research on computers. Intl J Ednl Res. 14(6), 1990, 521-31.

Vooijs, Marcel W and Voort, Tom H A Van der. Teaching television : The effects of critical television viewing curricula. Intl **J Ednl Res** 14(6), 1990, 543-52.

EDUCATIONAL EVALUATION

Angelo, Thomas A. Classroom assessment : Improving learning quality where it matters most. **New Directions for Teaching and Learning** 42, 1990, 71-82.

Ashworth, Kenneth H. Standardized testing in a less-than-perfect world. **Coll Bd Rev** (154), 1989-90, 10-3, 23-4.

Chiu, Chi-Kwan and Alliger, George M. A proposed method to combine ranking and graphic rating in performance appraisal : The quantitative ranking scale. **Ednl Psy Measurement** 50(3), 1990, 493-503.

Harris, R W. The CNAA, accreditation and **quality assurance. Hr Edn Rev** 22(3), 1990, 34-54.

Janzow, Fred and Eison, James. Grades : Their influence on students and faculty. **New Directions for Teaching and Learning** 42, 1990, 93-102.

Pintrich, Paul R and Johnson, Glenn Ross. Assessing and improving students learning strategies. **New Directions for Teaching and Learning** 42, 1990, 83-92.

Richardson, Richard C. and Skinner, Elizabth Fisk. Adapting to diversity : Organizational influences on student achievement. **J Hr End** 61(5), 1990, 485-511.

ECONOMICS OF EDUCATION

Turner, David and Pratt , John. Bidding for funds in higher education. Hr Edn Rev 22(3), 1990, 19-33.

Verstegen, Deborah A. Invidiousness and inviolability in public education finance. **Ednl Admn Q** 26(3), 1990, 205-34.

ADULT EDUCATION

Francis, J Bruce. Many lives to lead : The adult professional's quest. **New Directions for Adult and Continuing Education** 45, 1990, 37-48.

McClary, Sybil A. Stress, coping, and adult education. **New Directions for Adult and Continuing Education** 45, 1990, 65- 75.

Milan, Callistus W. The learning autobiography : A foundation for mentoring. **New Directions for Adult and Continuing Education** 45, 1990, 59-63.

DISTANCE EDUCATION

Melton, Reginald F. Transforming text for distance learning. **British J Ednl Tech** 21(3), 1990, 183-95.

Taylor, Rupert. South Africa's open universities : Challenging apartheid ? **Hr Edn Rev** 22(3), 1990, 5-17.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Mitter, Wolfgang. Educational reform in West and East Germany in European perspective. **Oxford Rev Edn** 16(3), 1990, 333-41.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities.

BIOLOGICAL SCIENCES

Environmental Sciences

1. Dimri, Goberdhan Prasad. **Genetics of some aspects of regulation of nitrogen fixing genes in Klebsiella pneumoniae and Azotobactor vinelandii.** JNU. Prof H K Das, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

Biochemistry

1. Bhattacharyya, Gautam. **Investigation on the mode of mutagenic and cytotoxic action of phaseolinone.** Calcutta.

2. Chakrabarti, Asit Kumar. **Molecular biochemical studies on kinetoplastid hemoflagellate, Leishmania donovani with reference to the enzymes involved in nucleic acid metabolism.** Calcutta.

3. Das, Mita. **Biochemical effects of cadmium in relation to alterations of several functional parameters in certain cells and organelles in rats.** Calcutta.

4. De, Amit Krishna. **Biochemical and pharmacological investigations of capsaicin from Indian chillis.** Calcutta.

5. Hegde, Ashok Narayan. **Studies on plasma membrane proteins of normal and tumour cells.** JNU. Dr M R Das, Centre for Cellular and Molecular Biology, Jawaharlal Nehru University, New Delhi.

6. Majumdar, Mitali. **Studies on the effect of vitamin A deficiency on certain aspects of biochemical changes of carbohydrate metabolism during diabetes mellitus.** Calcutta.

7. Mohammad Azam. **Interrelationship of catecholamines and insulin action in brain.** JNU. Prof (Mrs.) N Z Baquer, School of Life Sciences, Jawaharlal Nehru University, New Delhi.

8. Venkateswara Rao, D. **Molecular and biochemical studies on beta-thalassaemia.** Osmania.

Microbiology

1. Bhavsar, Deepa A. **Quantitative studies on the expression of rinderpest virus genes in acute and persistent infections.** IIT, Bangalore.

2. Gogte, Sneha. **Single cell oil from oleaginous yeasts isolated from the environment.** Osmania.

3. Natarajan, K. Gene expression yeast : **Studies on glucosamine-6-phosphate deaminase gene of Candida albicans.** JNU. Prof Asis Datta, School of Life Sciences, Jawaharlal Nehru University, New Delhi.

4. Ramaiah, N. **Studies on marine luminous bacteria.** Durgawati. Dr D Chandra Mohan, Scientist, B O D, National Institute of Oceanography, Dona Paula, Goa and Dr G P Agrawal, Department of Bio-Science, Rani Durgawati Vishwavidyalaya, Jabalpur.

5. Yawalkar, Vinayak Dattatraya. **Use of antibiotic sensitivity discs for determining the susceptibility of microorganisms to antibiotics.** Nagpur. Dr Daginawala, Department of Biochemistry, Nagpur University, Nagpur.

Botany

1. Adhya, Tapan Kr. **Microbial degradation of organophosphorus insecticides in rice soils.** Calcutta.

2. De, Achintya Kumar. **Studies on certain aspects in decays of bamboos caused by some basidiomycetes fungi.** Calcutta.

3. Divakar Rao, J. **Tissue culture studies in different genotypes of wild and cultivated chickpea.** Osmania.

4. Indira, P A. **Taxonomic studies on medicinal herbs used in ayurveda with special reference to Kerala.** Calicut. Dr V V Sivarajan, Prof, Department of Botany, University of Calicut, Calicut.

5. Jose, L. **Floristic and ecological studies of algae in polluted waters of Gujarat.** Patel. Dr R J Patel, Ex-Prof, Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar.

6. Katiyar, Sunil Kumar. **Trophic status of wetlands of Bhopal.** Barkatullah. Dr D K Belsare, Department of Biosciences, Barkatullah Vishwavidyalaya, Bhopal.

7. Lakshminarayana. **Cytological and anatomical studies in Asclepiadaceae.** Bangalore. Dr D G Krishnappa, Prof, Department of Botany, Bangalore University, Bangalore and Dr D Shivaramakrishna, Department of Botany, Bangalore University, Bangalore.

8. Maitra, Mala. **Investigation on plant allelochemic constituent and its analogues.** Calcutta.

9. Masih, Shashi Kumar. **Ethnobotanical studies in tribal areas of Baster and Jabalpur.** Durgawati. Dr M Ommachan,

Department of Bioscience, Rani Durgawati Vishwavidyalaya, Jabalpur.

10. Mohammad Shamsul Islam. **Studies on limnological dimensions on the dynamics of lentic hydrosphere with reference to Ravindra Sarovar, Gaya.** Magadh.

11. Mukhopadhyay, Rekha. **A cytotaxonomical, anatomical and palynological studies in some Indian species and varieties of Canna and Eriocaulon** . Calcutta.

12. Narasimha Rao, Laxmi. **Studies on the nature of functional abilities of roots in relation to drought recovery, sustenance and moisture utilisation of dryland rice, Oryza sativa L.** Osmania.

13. Prem Chand. **Studies on root rot and wilt diseases of pea, Pisum sativum L.** HAU.

14. Rabindra Nath. **Ecology of Carthamus tinctorius Linn.** Magadh. Dr D D Pandey, Department of Botany, SPM College, Udantpuri, Biharsharif.

15. Roy, Deepali Manas. Palynological investigations on some plants of Cruciferae. Nagpur. Dr G V Patil, Department of Botany, Institute of Science, Nagpur.

16. Sastri, Manju. **Structural differentiation of chromosomes and DNA estimation in several genera of monocotyledons.** Calcutta.

17. Satyavara Prasad, M. **Effect of cement kiln dust pollution on some economically important plants.** Patel. Dr J A Inamdar, Prof and Head, Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar.

18. Shriniwas Prasad. **Response of grassland ecosystem to cement dust pollution.** Magadh. Dr D D Pandey, Department of Botany, SPM College, Udantpuri, Biharshariff.

19. Singh, Satya Prakash. **Assessment of peroxide-related cellular events and DNA repair in the differential modification of oxic and anoxic radiation damage in Hordeum vulgare** . JNU. Prof P C Kesavan, School of Life Sciences, Jawaharlal Nehru University, New Delhi.

20. Siva Prasad, V. **Studies on carlavirus strains naturally infecting groundnut, Arachis hypogaea L in Rayalaseema area of Andhra Pradesh.** Venkateswara. Dr P Sreenivasulu, Department of Virology, Sri Venkateswara University College, Tirupati.

21. Surekha, M. **Studies on mycotoxin producing fungi associated with feeds and fodders.** Kakatiya. Dr S M Reddy, Reader, Department of Botany, Kakatiya University, Warangal.

22. Talwani, Sanjay. **Cytotaxonomic observations on some mosses of Dharamsala and adjoining areas.** Panjab.

23. Venkateswarlu, S. **Studies on blossom end rot of ridge gourd caused by Corynespora cassiicola (Berk, Curt) WEI.** Kakatiya. Dr V Thirupathaiah, Reader, Department of Botany, Kakatiya University, Warangal.

24. Verma, Nawal Kishor. **Response of grassland ecosystem to coal dust pollution.** Magadh. Dr D D Pandey, Department of Botany, SPM College, Udantpuri, Biharsharif.

25. Vyas, Harish. **A study on evaluation of nitrogen in municipal waste water and its biological control.** Vikram. Dr S K Billore, Reader, Department of Botany, Vikram University, Ujjain.

Agriculture

1. Asghari, Mohammad Reza. **Factors influencing the progress of stem and pod rots of groundnut induced by Sclerotium rolfsii Sacc.** Marathwada Agrl. Dr C D Mayee, Prof, Department of Plant Pathology, Marathwada Agricultural University, Parbhani.

2. Bandyopadhyay, Samar Kr. **Studies on soil humic substances.** D.Sc. Calcutta.

3. Choulwar, Arun Bhaskarrao. **Etiology and epidemiology of parawilt of cotton.** Marathwada Agrl. Dr C D Mayee, Prof, Department of Plant Pathology, Marathwada Agricultural University, Parbhani.

4. Das, Prasanta Kumar. **The effect of micronutrients on growth, yield and quality on banana Cvs Jahaji (AAA), Barjahaji (AAA) and chenichampa (AAB).** Assam Agrl. Dr N K Mohan, Chief Scientist, Horticulture Research Station, Kahikuchi, Assam Agricultural University, Jorhat.

5. Khapre, Purushottam Ranoji. **Genetic architecture of source- sink traits in pigeonpea, Cajanus cajan (L) Millsp under different cropping systems.** Marathwada Agrl. Dr Y S Nerkar, Assoc Dean and Principal, College of Agriculture, Parbhani.

6. Praveen Rao, V. **Response of summer sesame, Sesamum indicum L to irrigation and fertilizer management.** Marathwada Agrl. Dr S V Raikhelkar, Head, Department of Agronomy, Marathwada Agricultural University, Parbhani.

7. Satyawan. **Effect of varying plant density and nitrogen levels on growth, yield and quality of toria, Brassica campestris L var toria Duth & Full.** HAU.

8. Verma, Shyam Sundar. **Study of physico-chemical properties and availability of micro-nutrients with special reference to copper and zinc in Madhya Pradesh soils.** Barkatullah. Dr R M Shrivastava, Department of Chemistry, Motilal Vigyan Mahavidyalaya, Bhopal.

Zoology

1. Basalingappa, Magadum Vidyadevi. **Some studies on the testis in the pigeon, Columba livia.** Karnatak. Dr (Smt) B A Shanbhag, Department of Studies in Zoology, Karnatak University, Dharwad.

2. Daniel Raj, K. **Studies on parasitism and pathogenicity of Howardula sp. (Nematoda) in the coleopteran host, Longitarsus belgaumensis Jacoby.** Osmania.

3. Daniels, R J Ranjit. **A conservation strategy for the birds of the Uttar Kannada District.** IISc Bangalore.

4. Daruka, Sarita. Studies on the impact of synergist, piperonyl butoxide on the development of deltamethrin resistance in Indian strains of Aedes aegypti L, Culex quinquefasciatus Say and Anopheles stephensi Liston. Delhi.

5. Deva Raj, E. **Relative effects of pain and capsaicin on the neuromuscular system of Indian palm-squirrel.** Osmania.

6. Gupta, Kamal Kumar. **Accessory reproductive glands of Dysdercus koenigii Fabricius : Developmental anatomy, physiology and role of their secretion in female reproduction.** Delhi.

7. Johri, Malini. **Limnological and water quality status of lower lake of Bhopal with special reference to zooplankton macrophytes and periphyton components.** Barkatullah. Dr S K Kulshreshta, Department of Zoology, Motilal Vigyan Mahavidyalaya, Bhopal.

8. Khan, Altaf Ahmad. **Biology of certain polluted water of MP and Rajasthan with special reference to phytoplankton and macrobenthic fauna.** Barkatullah. Dr S K Kulshrestha, Head, Department of Zoology, Motilal Vigyan Mahavidyalaya, Bhopal.

9. Khare, Vandana. **Effect of methylamine on various organs of Clarias batrachus Linn and Heteropneustes fossilis Bloch.** Barkatullah. Dr Santosh Kumar, Department of Bio-Sciences, Barkatullah Vishwavidyalaya, Bhopal.

10. Kohli, Rita. **Studies on the presence of sulphate in pituitary luteinizing hormone and prolactin.** Delhi.

11. Mohammad Kareemullah. **Studies on some pseudoscorpions from Gujarat State.** Bhavnagar. Dr B H Patel, Sir P P Institute of Science, Bhavnagar.

12. Pachori, Rajesh. **Studies on tobacco caterpillar, Spodoptera litura Fabricius as cutworm with special reference to its chemical control.** Durgawati. Dr V P Gargav, Scientist, Department of Entomology, Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur and Dr A K Shrivastava, Department of Zoology, Government Science College, Jabalpur.

13. Prabhakar, E. **Studies on toxic action of Datura metel plant extracts and scopolamine on cholinesterases and smooth muscle contractility with special reference to its reversibility.** Venkateswara. Dr M V Nanda Kumar, Department of Zoology, Sri Venkateswara University College, Tirupati.

14. Ramesh Babu, B. **Genetic studies on 'Andh' and 'Thoti' tribes of Andhra Pradesh.** Osmania.

15. Sachdeva, Jaswant Singh. Gamma irradiation of Dysdercus koenigii Fabricius : Effects on various aspects of its biology. Delhi.

16. Saha, Biplab Kumar. **Studies on aphida-phidiid complex of Jammu and Kashmir.** Calcutta.

17. Shrivastava, Manisha. **Limnological and water quality status of lower lake of Bhopal with special reference to macrozoobenthos and fishes.** Barkatullah. Dr S K Kulshrestha, Department of Zoology, Motilal Vigyan Mahavidyalaya, Bhopal.

18. Suryanarayana Murthy, U. **Studies on the control of mosquitoes (Diptera : Culicidae) by use of natural products and natural enemies under the laboratory and field conditions.** Osmania.

19. Tripathi, Nibha. **Morphological and biochemical studies on the heart and blood of Calotes versicolor with special reference to electrophoretic analysis of serum proteins.** Barkatullah. Dr B N Seth, Head, Department of Zoology, SSL Jain College, Vidisha.

20. Umadevi, G. **Studies on the effect of physical exercises and administration of PGF and PMSG on the reproductive tissue Metabolic events of hysterectomized albino rats.** Venkateswara. Dr S Govindappa, Department of Zoology, Sri Venkateswara University College, Tirupati.

Medical Sciences

1. Aley, K O. **Studies on the role of GABA-ergic substances in the pharmacological action of some drugs.** Panjab.

2. Azad, Mohammad Abul Kalam. **Studies on crystal growth of trimethoprim and metromidazole benzoate in suspensions.** Nagpur. Dr A K Dorle, Department of Pharmaceutical Sciences, Nagpur University, Nagpur.

3. Bhattacharyya, Somnath. **Electrophysiological evaluation of antibiotic blockade of neuromuscular function.** Calcutta.

4. Chaturvedi, Sudha. **Studies on Blastomyces dermatitidis : Re- appraisal of isolation and identification techniques, factors affecting virulence and role in systemic disease.** Delhi.

5. Gaur, Shikha. **Studies on airway hyperreactivity : Physiological and biochemical aspects.** Delhi.

6. Giridhar, R. **Development of new analytical methods for estimation of antibiotics and other drugs in their dosage forms.** Kakatiya. Dr G Ramana Rao, Deputy General Manager, Indian Drugs and Pharmaceuticals Limited, Hyderabad and Prof C K Kokate, Prof, Department of Pharmacy, University College of Pharmaceutical Sciences, Kakatiya University, Warangal.

7. Gorakh, Arun Kumar. **Pharmacological study on isolated melanophores of a carp, C margiala Ham.** Bangalore. Dr Arun Raghuwanshi, Department of Bio-Sciences, Barkatullah Vishwavidyalaya, Bhopal.

8. Gupta, Sanjib Kumar. **Dietary influence on cholesterol metabolism.** Calcutta.

9. Islam, Mohammad Anwar Ul. **Studies on factors affecting electrokinetic potential and related properties of pharmaceutical dispersion and their significance in stability prediction.** Nagpur. Dr A K Dorle, Department of Pharmacy, Nagpur University, Nagpur.

10. Santra, Amal Kumar. **Isolation and characterization of Ascaris secretary and excretory products (ASEP) and its effect on liver of experimental animals.** Calcutta.

11. Venkateswarlu, V. **Pharmaceutical investigations on antidiabetic herbal drugs.** Kakatiya. Prof C K Kokate, Department of Pharmacy, University College of Pharmaceutical Sciences, Kakatiya University, Warangal and Prof D Rambhau, Department of Pharmacy, University College of Pharmaceutical Sciences, Kakatiya University, Warangal.

CLASSIFIED ADVERTISEMENTS

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WARANGAL - 506004 (A.P.)

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I/C Principal

DEVI AHILYA VISHWAVIDYALAYA INDORE

169, R.N.T. Marg, Indore- 452001

EMPLOYMENT NOTICE
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Date: 5/11/90

Applications in the form, available from the undersigned on payment of Rs.10/- in person or Rs.20/-m by means of a crossed IPO/DD payable to the REGISTRAR, DAVV, INDORE are invited for the following positions. Completed application form should reach the undersigned by **31st December, 1990**; late applications, application on plain paper or suggested candidates can also be considered. Minimum qualifications and payscales are as prescribed by AICTE for Engineering sciences and UGC for others. Candidates may be considered for lower position.

FACULTY OF ENINEERING SCIENCES: (1) ENERGY: P-2, R-2; SP- Planning conservation; renewable canidates may also be considered for DIRECTOR (5100-5700) and DY.DIRECTOR (3700-5000); (2) ELECTRONICS : P-1, L-1; SP-Signal and image processing (Solid State), Circuitry/devices, power electronics, controls. (3) INSTRUMENTATION: P-1, R-2, L-3; (4)

BIO-TECHNOLOGY: P-1,L-1, SP- Molecular Biology, Molecular Genetics, Microbial Technology, Plant Bio-Technology/Plant Bio-Chemistry, Enzyme Engineering, Biology of Cloning Vectors, Bioenergetics, Plant Molecular Biology; (5) COMPUTER SCIENCE: R-1; (6) COMPUTER CENTRE: SYSTEMS ENGINEER-1 (7) AUDIO-VISUAL RESEARCH CENTRE: (a) CO-ORDINATOR-1(3700-5700); (b) PRODUCER-1, ASTT.ENGR.-1, RESEARCH OFFICER-1(2200-4000).

FACULTY OF MANAGEMENT:P-2; SP-Quantitative Techniques, MIS Production Mgt/Marketing financial Mgt. Tourism. OTHER FACULTIES: (1) PHYSICS: P-1(likely); L-1; SP-Material Science, Surfae Physics, Mossabauer Studies, Plasma Physics, Lasers and Applns, Nonlinear dynamics, Particle Physics; (2)CHEMISTRY: R-1; Inorganic Chemistry/Crystallography, Organic Chemistry; (3) BIO-CHEMISTRY:R-1; SP-Clinical Biochemistry; (4) COMPARATIVE INDIAN LANGUAGES AND CULTURE:P-1, L-1; Desirble SP- Proficiency and Creative writing in Hindi, English and South Indian Language/Culture and other Indian Languages/cultures; (5) ECONOMICS: P-1; SP-Mathematical Economics/Econometrics; (6) BAHAI STUDIES: P-1; or Chief Rsearcher -1, SP-Arts/Social Sciences with knowledge of Bahai culture.

P,R,L,SP DENOTES PROFESSOR, READER, LECTURER, SPECIALISTION.

Positions in Instrumentation may be designated as Tech.Officers. The qualification for Audio Visual Research Centre Staff may be obtained alongwith the application form. SC/ST reservation as per rules; second class railway/bus fare for distances above 250 kms. payable to those invited for interview.

C.P.MODI
REGISTRAR

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THE UNIVERSITY OF BURDWAN RAJBATI : BURDWAN WEST BENGAL

Advertisement No. 7/90-91

Dated. November 12, 1990

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(B) Readership in Philosophy : One post
(c) Lectureship in Zoology : One post.
(D) Lecutreship in Physics : One post.

MINIMUM QUALIFICATIONS FOR THE POSTS:

As prescribed by the U.G.C.

SPECIALISATION OR PROFICIENCY:

For the post indicated at "A" - Marketing Management.

For the post indicated at "B" - Psychology.

For the post indicated at "C" - Parasitology/Fish & Fisheries/Cytology and Molecular Genetics.

For the post indicated at "D" - Nuclear Physics and Ph.D. or equivalent research experience in Experimental Nuclear Physics.

Those who applied earlier in response to advertisment no. 8/89-90 dated 4.10.1989 and no. 1/90-91 dated 13.6.1990 for the posts indicated at "A" & "B" need not apply afresh.

Prescribed application forms along with U.G.C.'s prescribed qualifications may be obtained from Rajbati, University of Burdwan, personally on payment of Rs.10/- in cash at the University Sales Counter from 11 A.M. to 12 Noon on Saturdays and 11 A.M. to 1.30 P.M.

INDIAN COUNCIL OF SOCIAL SCIENCE RESEARCH

Applications are invited for the following regular doctoral fellowships:

A. CENTRALLY ADMINISTERED FELLOWSHIPS:

I. Fellowships in specified areas:

(A) Women's Studies: (B) Medical Sociology/Medical Anthropology; and (C) For Physically Handicapped Scholars.

II. Open Fellowships:

III. ICSSR Foundation Day Fellowship

IV. Fellowships for Students of North East Region

B. INSTITUTIONAL DOCTORAL FELLOWSHIPS TENABLE

At following Institutes (1) Madras Institute of Development Studies, 79 Second Main Road, Adyar, Madras. (2) Centre for Economic & Social Studies, Begumpat, Hyderabad. (3) Institute of Public Enterprises, Osmania Univesity Campus, Hyderabad. (4) GIDS, Sector 'O' Aliganj Housing Scheme, Lucknow. (5) G.B. Pant Social Science Institute, Jhusi, Allahabad. (6) A.N. Sinha Institute of Social Studies, Patna. (7) CSSS, 10 Lake Terrace, Calcutta. (8) Indian Institute of Education, 128/2 J P Naik Road, Kothrud, Pune. (9) Centre for Socil Studies, South Gujarat University Campus, Surat. (10) Sardar Patel Institute of Economic & Social Research, Thaltej Road, Ahmedabad. (11) Institute of Economic Growth, University Enclave, Delhi. (12) Centre for the Study of Developing Societies, 29 Rajpur Road, Delhi. (13) Gandhian Institute of Studies, Rajghat, Varanasi.

C. CONDITIONS OF ELIGIBILITY:

Candidates must have cleared the National Educational Test in social sciences held by the University Grants Commission.

Applicants must be registered for Ph.D. or should be able to complete the registration formalities within six months of the period before he/she is allowed to join the fellowship.

For further details and applications form kindly send a self addressed, stamped envelope (Rs.3/-) to Director (Fellowship), ICSSR, 35 Ferozeshah Road, New Delhi - 110001 so as to reach him latest by 30th December 1990. Details about Institutional Fellowships will be available from the concerned Institute.

on other working days or by sending a self-addressed stamped (Re. 2/-) envelope (11" x 9") accompained by Crossed Indian Postal Order of Rs.10/- in favour of the Finance Officer, University of Burdwan.

Last date for submission of application with requisite application fee of Rs.5/- is **December 15, 1990.**

JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI
ADVT. NO. A&E-II/12/90

JNU has openings for the following positions in the areas indicated against each:

1. **Professor** in American Studies
2. **Professor** in Arabic.

ESSENTIAL QUALIFICATIONS:

(a) An eminent scholar with published work of high quality, actively engaged in research. About ten years' experience in teaching and/or research in the concerned area. Experience of guiding research at doctoral level. OR (b) An outstanding scholar with established reputation who has made significant contribution to knowledge.

DESIRABLE QUALIFICATIONS:

For Post No. (1): Specialisation in the 20th century U.S. Foreign Policy, as well as social, economic and political developments in the United States. **For Post No. (2):** Degree in Arabic from a University of the Arab World; (b) Fluency in modern Arabic through direct method; (c) Acquaintance with new methods of teaching; and (d) Familiarity of handling the modern teaching aids e.g. language laboratory/audio-visual.

SCALE OF PAY: Professor: Rs. 4500-7300.

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Any of the qualifications/experience may be relaxed at the discretion of the University.

Application forms may be obtained free of cost in person or by sending a self-addressed envelope (23 cm × 10 cm) duly stamped of the value of Re.1/- to the Deputy Registrar (A&E-II), Room No. 204-B, Administrative Block, Jawaharlal Nehru University, New Delhi-110067. The applications in the prescribed form complete in all respect duly forwarded by the competent authority (for those in service) should reach this University latest by **13th December, 1990.**

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Applications on prescribed form (Obtainable from Director, STEP, UOR, Roorkee - 247667) alongwith the attested copies of certificates in support of qualifications & experience etc. and I.P.O. for Rs.10/- for Professor's post & Rs.5/- for remaining posts drawn in favour of the Director, STEP, Roorkee are invited by 25.12.1990 for the following temporary posts under the project Science & Technology Entrepreneurship Park sponsored by the Deptt. of Science & Technology, Govt. of India, Central Financial Institutions, Govt. of U.P. and other agencies. The appointments will be made in the first instance for one year duration but likely to be extended.

Notes: (i) The applicants should not be more than 45 years of age.

(ii) Preference will be given to the SC/ST candidates, if found suitable.

(iii) Applications from overseas candidates will be acceptable upto 10.1.1991.

1. PROFESSOR(RESEARCH) Post: ONE(1)

Scale of pay Rs.5100-150-5700-200-7300 plus D.A. and other allowances as admissible

Qualification & Experience

ESSENTIAL: Ph.D., with first class or equivalent (in terms of Grades etc.) at the preceding degree in the field of Electronics computers of Mechanical Engg. A very good academic record throughout and a minimum of 10 years teaching/research/industrial experience of which at least 5 years should be at the level of Assistant Professor/Associate Professor.

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who has made significant contribution to knowledge but not having a Ph.D. degree could also be considered for appointment to sparingly and in extremely deserving cases on Contact basis.

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University News

MONDAY, DECEMBER 3, 1990 Rs. 2.50

A View of the Youth Rally

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No.601001/90 Dated 19.11.1990

Indian School of Mines

Dhanbad-826004

(Deemed to be a University under UGC Act)

ADMISSION NOTIFICATION-1991

An all India Entrance Examination will be held at a large number of centres throughout India for admissions to B.Tech and M.Sc.Tech programmes during 1991-92 session commencing on July 1,1991 as per details given below:

Dates of Examination: **2nd May (Thursday) and 3rd May (Friday)-1991.**

Issue of application form: **January 1, 1991 to February 18,1991.** (by post only)

Last date of receiving filled application: **February 28, 1991.**

4-Year B.Tech programme (FORM-A): Upper age limit as on 15.6.1991 is 21 years for Petroleum Engg and 22 years for other disciplines. Disciplines of admission are Mining Engg, Petroleum Engg, Mining Machinery, Mineral Engg and Opencast Mining. Prescribed qualification for admission is pass in I.Sc or XII of CBCS or + 2 of 10+2 pattern or equivalent examination with Physics, Chemistry, Mathematics and English.

3-year M.Sc. Tech programme (FORM - B) : Upper age limit as on 15.6.1991 is 24 years. Disciplines of admissions are Applied Geology and Applied Geophysics. Prescribed qualification for admission to (a) Applied Geology is pass in B.Sc.(3 year course)/B.Sc. (2 year + 1 year bridge course) with Geology as Major/Hons subject and any two subjects out of Physics, Chemistry and Mathematics and (b) Applied Geophyiscs is pass in B.Sc. (3-year course)/B.Sc.(2 years + 1 year bridge course) with Physics as Major/Hons subject and Mathematics as subsidiary subject with another subsidiary out of Chemistry, Geology, Statistics, Electronics, Computer Science.

3-Year Condensed B.Tech Programme (FORM-C) : There is no age limit. Disciplines of admissions are Mining Engg, Mineral Engg and Mining Machinery. Prescribed qualifications for admissions to (a) Mining Engg is Diploma in Mining or in Mining and Mine Surveying (b) Mineral Engg is Diploma in Mining/Mineral/Chem/Elect/Mech Engg and (c) Mining Machinery is Diploma in Mech/Elect Engg. In each case candidate should have passed Diploma examination at least after School Final/Higher Secondary examination and should have minimum one year industrial experience after Diploma.

Note: (1) Age limit is relaxable by 3 years in case of SC/ST candidates.

(2) 15% and 7.5% seats in each case are reserved for SC/ST candidates. One seat each in Petroleum Engg, Mineral Engineering and Opencast Mining of 4-year B.Tech programme and one seat each in Applied Geology and Applied Geophysics of M.S.c Tech programmes are reserved for GIRL candidates. Two seats in 4-year B.Tech programme are also reserved for children/wards of defence personnel killed/disabled.

(3) Examination for admissions to 3-Year condensed degree programme will be conducted only when minimum number of valid applications shall be 50.

(4) Candidates appearing at qualifying examinations in 1991 may be permitted provisionally to appear at Entrance Examination but their admissions will be subject to the conditions that their examinations (theory and practicals) will be over before 15.6.1991 and results must be submitted before 30.9.1991.

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M. Ramakrishna
ACTG. REGISTRAR

C.F.T.R.I., MYSOR

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Bridging the Gap Between Education and Life

K .Venkata Reddy*

The whims of our bureaucrats who frame our educational policies, the wooden approach of our institutional heads, the oppressive impersonal attitude of our teachers and, above all, the staleness of content have made the present education what it is dull, drab, insipid, meaningless and irrelevant to the context of life. Education today provides little more than a trademark, attesting to a person's having undergone an accepted period in formal training in his special subject.

Furthermore, education today has been reduced to nothing but a systematic training in competitiveness rather than co-operation, cramming of factual data rather than experimental learning, periodical pumping in and pumping out of information rather than inculcation of a genuine spirit of inquiry and a parrot-like mouthing of opinions and conclusions arrived at by others rather than forming opinions and arriving at conclusions using all the innovative and imaginative resources that human beings have at their command right within them. As a result of this, education today seems to have little bearing on the physical, social and emotional lives of people. It has lost its relevance to life and has become a source of drudgery.

There are, as James T. Adams has said, obviously two educations one to teach how to make a living, and the other how to live. While both these aspects need equal emphasis in the imparting of education, we see that great stress has been laid on 'how to make a living' at the cost of learning 'how to live'. The training in 'how to live' has been totally neglected.

The human being starts to lose touch with himself as he receives his education first at the hands of his parents, and later from his teachers at various levels. These big people around him teach him facts and figures much more than necessary. Sometimes, they stereotype him into set patterns of behaviour, so as to conform to the accepted pattern, in the social fabric, leaving him little scope for creative experimentation and self-discovery under the burden of demands and expectations. His innate drive to explore, experiment, innovate and discover gets stifled in the process, and the end-result may be a confused human being doing what he 'ought' to be doing, simultaneously experiencing varied pulls within himself from those stifled basic needs and drives.

One can hope to extricate oneself from such a stifling atmosphere by learning how to live. The phrase, 'how to live', is to be understood,first, as a process of awareness about the uniqueness of every human being. It is essential to know what one is made up of, what makes one's life based on some early decisions one made for oneself. One can then redecide on the basis of one's newly acquired

(Continued on page 40)

**Professor of English, Sri Krishnadevaraya University, Anantapur-515003*

University - Industry Interaction

Exploring Areas and Forms of Collaboration

A Study conducted by the Research Cell in Economics of Education, Association of Indian Universities for presentation as Background Paper for the Group Discussion on 'Universities and Productivity' organised on the accasion of the 65th Annual Meeting of the Association of Indian Universities at Gujarat Vidyapith on 9 October, 1990.

I

Education-Productivity: The Nexus

Higher Education institutions contribute in a variety of ways to national progress especially through the development of human resources which constitute the ultimate basis for raising productivity and generating wealth of nations. The development of human resources is indeed both a means as well as an end in itself; and, therefore, almost entire exercises pertaining to socio-economic policy formulation, and planning and implementation strategies thereof, focus essentially on attaining the goal of human resource development. In economic sense, capital and natural resources are passive factors of production, whereas human resources are the active agents who accumulate capital, exploit natural resources, build social, economic and political organisations as the human beings alone have the ability to search knowledge, analyse information, innovate technologies and utilize the same in their day to day routine activities. Obviously, if a country is unable to develop the skills and knowledge of its people and to utilize them effectively in various socio-economic activities, it would be unable to develop anything else. In brief, it is the development of human resources of a nation, not its capital nor its material resources, that ultimately determine the character and pace of economic and social development which, in effect, influence the well being of people.

It is against this backdrop that the National Policy on Education-1986 has observed that 'higher education provides people with an opportunity to reflect on the critical social, economic, cultural, moral and spiritual issues facing humanity. It contributes to national development through dissemination of specialised knowledge and skills. It is, therefore, a crucial factor for survival'. It follows that it is indeed difficult to conceive of a plan for building up a sustainable and prosperous society without the development of human resources which is dependent on the health and vitality of higher education and the national economy. Thus, higher education including research and economy are inextricably linked with each other. For instance, while the economy provides necessary resources for promoting the system of higher education, the latter prepares, in turn, a cadre of manpower with varying degrees of specialisation and levels of skills for increasing productivity of various factors of production, which consequently enhance income and improve the quality of life of people. Moreover, the programmes of higher education, pertaining especially to the theoretical and applied fields of studies, provide desirable perspectives and necessary framework for formulation of appropriate policies with a view to ensuring long-term sustainable development. The planners and policy makers have to be therefore genuinly concerned about the strength and vitality of the system of higher education to make its maximum contribution to the fulfilment of changing and growing social needs of the society. Such a concern is justified even more strongly in developing countries like India which suffer not only from deficiency in physical and financial capital but also the abundance of labour force having much less than desired level of education and training as may be necessary to achieve the minimum rate of economic growth for sustainable development. In order for creating such conditions as would be conducive for ensuring better standard of living, the promotion of human resources by way of strengthening education system, in which the programmes at tertiary level are to determine the quality of service and guidance which, in effect, have significant bearing on productivity, is *sine qua non* for accelerating the pace of national development.

The experience of most of the developed countries reveal that they have thrived owing largely to the increase in threshold of education, training and skills formation. As the economies of both developed and developing countries become more knowledge and technology intensive, human resources would continue to become more central to economic progress. Almost in every country, though in varying degrees, the search for knowledge and new technology has become the major concern of national economies from a more strategic point of view since productivity is increasingly determined by the knowledge and skills workers put into their tasks. Human knowledge is the moving factor behind productivity change and when the requisite knowledge is missing, output suffers; however much finance and hardware are supplied.

There seems to be two fundamental implications and policy issues emerging from such situations as above. Firstly, the minimum competence threshold for being able to function in the economy is moving upward.That is to say, it is becoming more and more difficult for the individual to perform in the emerging economy if he/she does not have the necessary skills. This is one of the key factors behind recent and renewed interest in education and training everywhere. The second implication is that there is a great risk that the new economic situation, if the system of education, training and skills formation are not improved, will create a dividing line between those who can and those who cannot perform because of their level of skills. The demands of new technology upon system of human resource development have, therefore, to be seen in the perspective of a more knowledge intensive economy. Hence, when new technologies lead to an increase in skills requirements, both within the work place and within the economy as a whole, systems of education and training must increase the quality and relevance of their outputs, which would, in effect, bring about overall improvements in productivity and production.

Since the inception of planning era, the foregoing considerations have led to a commendable progress in respects of expansion and diversification of higher education system which has emerged out to be tne third largest in the world. The factors like the growth of population, widening base of elementary and secondary education, equalization of educational oportunities and the growing realization among Indian people about the socio-economic value of education, have spurred the demand for higher education. By the end of the century, it is likely that the total enrolment at tertiary level would continue to rise at around 10 percent per annum and reach to about 6 million as against 4 million in 1988- 89. However, even at this high rate of growth of enrolment, the share of students who benefit from higher educational facilities would remain merely about 6 to 7 per cent of the total age- specific population. If this ratio is taken as a major indicator of human capital formation, it would mean that the quality of inputs into all the industrial and other productive enterprises would continue to be invariably low as compared to the standards of the economies with which India would have to compete. As a result of this, the quality and quantity of outputs would remain below the expected level which, in efect, would impede India's development efforts to occupy a place of prime importance in the comity of nations. Obviously, then the system of higher education ought to be examined very closely so as to ensure effectiveness in its multifacited role that it plays. As against this backdrops of linkages between education and productivity, the university- industry interface is proposed to be examined in the following chapters.

University-Industry Interaction
The Concern for Collaborations

The Background

Ever since the inception of planning era in 1951, rapid industrialization has been considered to be the key factor for improving the well-being of the people and accordingly steps have been taken from time to time to create the conditions for ensuring expansion and diversification of the industries at various scales of operations. Development of industries and their sustained growth require the inputs of technical and scientific knowledge so as to raise efficiency and reduce costs of production, to ensure better utilization of resources, to create know-how for appropriate technologies, and to adapt the imported technology to the local conditions. While the educational institutions have made commendable success in this regard, their contributions are much less than desired. Needless to say, the task of creating a proper technological and scientific base for rapid industrial and economic development principally lies with the university-level institutions. This is partly because these institution are by and large still clinging to the traditional notion that the fundamental values to which universities owe their allegiance are for creation and dissemination of knowledge which may not be directly related to the societal needs. Besides, the lack of adequate encouragement for promoting research in universities and continued dependence or preference for imported know-how on the part of the policy-makers, have also contributed to the growing isolation of universities from the mainstream of national economic life and industrial activities. The major role of the Indian university- level institutions has however been to supply the scientific and technical manpower primarily for operation and maintenance of the existing industries. Here too, due primarily to the lack of proper manpower planning in general, and the lack of coordination between universities and industries in particular, a high degree of mis-match is observable between the demand for and supply of highly skilled and trained manpower. This has created a huge army of university degree holders who, on the one hand, are not required by the industrial sector, and on the other, the industrial sector is facing the shortage of highly skilled manpower in some key areas which have significant bearing on productivity.

In view of such a scenario of university-industry interactions in India, there are some specificities which are needed to be looked into at this stage. Firstly, there is a lack of mutual understanding, rather lack of mutual appreciation, between the academicians and industrialists/ managers of the complementary nature of their individual fields of activities, which if properly harnessed could herald a new era in India's processes of industrial development. The academicians have a tendency to think that the industrialists/managers hardly do anything more than the routine maintenance of imported mechinery and the industrialists/managers in turn think that the academic staff do little more than chalk-talk that too from books of foreign authors or outdated reading materials.

Secondly, much of the researches conducted at the institutions where adequate infrastructure facility have been created, are in such areas of knowledge which are not relevant for the promotion of industries.

Thirdly, in spite of all the attractive facilities like money, machinery, material and preference offered for the unemployed graduates by the government and various other agencies to make them successful entrepreneurs, they are not as yet confident enough to take up challenges and rise to the occasion. The reason behind it is the lack of industrial knowledge and the requisite competence. In most cases they do not know the requirements of the society and the economy to select the product for commercial manufacturing. They are not sufficiently acquainted with the industrial set up required for establishment of any enterprise and the stratagies to run it. They are moreover not fully conversant with the practical approach to co-ordinate the inter related aspects such as financing, marketing and sales promotion etc. While it is true that it is not possible to provide complete background necessary for the students to become entrepreneurs in the curriculum, it should, however, provide sufficient guidelines and prepare them to be able to undertake an industrial venture.

Fourthly, the creation of national research agencies like the Council for Scientific and Industrial Research (CSIR), the Indian Space Research Organisation (ISRO), the Department of Atomic Energy (DAE), the Defence Research & Development Organisation (DRDO) etc. outside the university system have adversely affected the teaching and research activities of universities. Due to better emoluments and job opportunities, researchers are attracted towards the laboratories under these research agencies and, as a result, the universities are depleted of their good research workers and find it difficult to recruit new ones.

Finally, the funds available to universities being meagre, they find difficult to equip the laboratories properly with instruments and machineries required for advanced research work in industrial fields.

The results of all these have been obvious. Except for a few university-level institutions like the Indian Institutes of Technology (IITs), the Indian Institute of Science, etc., the majority of university-level institutions in India have turned out to be the producers of a vast army of degree holders with knowledge having little relevance to the world of work. Moreover, a number of publications of the faculty members are of either dubious quality or of no much use for the industrial sector. Under such circumstances, the university-level institutions have been put on the defensive even in fulfilling their traditional objectives of creation and dissemination of knowledge for its own sake, not to talk about gearing themselves up for meeting the emerging needs of the society in general, and those of the economy in particular.

The need for University-Industry Interaction

During the last few years, there has however, been an increasing awareness that the university-level institutions with their highly talented staff should play a major role in national development. This awareness has led to some steps being taken in some of the institutions to build closer contacts with industry. By developing such contacts the universities are expected to get cooperation from industrial executives to make teaching and formulation of their research projects more relevant to national needs, while the industrial executives are expected to receive advice and guidance from academics to solve their problems in improving productivity and raising the volume of production. In visualizing university-industry co-operative efforts, both the educators and industry-leaders therefore must foresee some areas of mutual advantages or benefits as under:

The benefits of university-industry interactions should accrue to students, faculty members, university-level institutions, industries and the public.

Students should benefit from the relationship with industry by being exposed to practical problems through contacts with industrial-scientists, by improving their prospects for employment through internship and summer employment as well as special recruitment programmes that are established through such relations. A large number of pre-doctoral graduate students and post-doctoral research associates receive their initiation to research, sharpen their research skills by working on sponsored research projects. Contact with industry through sponsorship of research or fellowship, or through work-study programmes brings financial support for the needy students, and in addition, an opportunity for the research apprentices to obtain valuable experience. There is the opportunity to learn the industrial perspective, to better understand those factors that motivate industrial research and to better appreciate the criteria by which research is judged to be successful.

Faculty members may individually benefit by industrial contacts that lead to consulting opportunities with accompanying additional income. Consulting also provides the faculty members with increased awareness of the state-of-the-art as practised in industry, and provides material that can enrich class-room teaching as well. Consulting activities provide an insight into the new areas of research and broaden the outlook for conducting research in applied fields. Industrial sponsorship of research programmes provides additional resources for university development. In some cases, industry is prepared to support research which falls outside the purview of the major sources of research-support for a given discipline.

The most obvious benefit to universities from closer relations with industry is the acquisition of new resources, in the forms of gifts, grants, research contracts and other forms of support for students, faculty and staff. Closer ties with industry also promise to facilitate technology transfer, so that a university might hope to benefit more from its patent and licensing operations. These ties with industry may offer an opportunity for university to convey its aims and programmes better to corporate leaders who may help them in better appreciating the potentials of universities for innovative training and research. Worthwhile results can be obtained in some cases when facilities including technical manpower that are available in the respective institutions are mutually shared for working on developmental problems. Many industrial research projects undertaken in university laboratories cannot be brought to function unless investigations at the final stage are carried out at plants.

Industry has depended upon universities as the source of trained manpower at both the degree and advanced degree levels. The coupling of graduate education with research in universities constitutes an apprenticeship system that enables research scientists and engineers to function in a highly competitive industrial environment with a minimum of on-the-job orientation. At the same time, industry looks to university research as source of new ideas and developing technology. The existence of established fundamental research programmes in universities provides industry with access to experts in certain fields, without the need for extensive in-house investment in those areas of basic research. The establishment of strong ties with universities is especially important for the newer knowledge intensive industries that are expected to account for most of the growth in industrial production during the next few decades. Such industries characteristically invest heavily in R&D expenditures, and are critically dependent on the continuing flow of new personnel, for staff expansion and to replace engineers and scientists whose technical background become outdated.

Industry benefits from the research results and from access to the ideas and results of active university research laboratories. They can also benefit from reduced time in transferring the results of research for commercialization. They also benefit from the enhanced training opportunities offered to their present and future employees.

The community or public derive benefits through the provisions for: (a) better all-round education programmes which help in raising the standard of living , (b) facilitating entry of new industries into the locality where technical education can help provide training and employment apportunities, and (c) demonstration to the members of the community that education is a continuous process and therefore adults should go to university for improving their abilities to handle their jobs, or to move on to the better positions and thus utilize their fullest potential. The various forms of industry-institution collaborations, which ensure the accrual of benefits discussed above are described in the following section.

III

Some forms of University-Industry Collaboration

In this Chapter an attempt is made to identify the areas in which industry and institution could possibly collaborate for mutual benefits. The various forms of collaboration may be broadly classified as follows (i) student-centred activities; (ii) teacher-centred activities; (iii) provision of resources; and (iv) other collaborative activities. These are discussed below in seriatim.

Student-Centred Activities

Student-centred activities usually consist of industry's participation in the teaching Process, arranging in-plant training, field visits for students, development of curricula, placement of students etc. The major objective of such activities is to make the students conversant with the various technical problems faced by the industry as well as the recent advances accomplished in different areas of industrial undertakings.

Industry's Participation in the Teaching Process

Industries often offer the services of some of its senior persons either on a full-time basis for a period of one or two years or on a part-time basis, so as to ensure that a certain percentage of the teaching staff represent the practical world of industry. Such an arrangement is made since the very initial stage of commencing a particular course of study, namely, the determination of the objectives of the different programmes or courses of study, and the preparation of the curricula and course materials. Such an arrangement is mutually beneficial as the persons so deputed bring back with them new knowledge and fresh outlook to the industry after the end of such contracts.

The industries should therefore encourage and spare some of their interested staff members to participate in regular teaching programme particularly in practical and lab based courses. This may necessitate the practicing scientists and engineers to stay for a longer period in the campuses and let the educational institutes have the benefits of such feed back for raising the relevance of educational programmes. This would supplement the academic programmes and provide the necessary practical bias. Moreover the industrial executives particularly of research departments should also be invited as external examiners for undergraduate as well as post graduate examinations so as to enable the industry to be acquainted with the research and training programme of the institute.

To facilitate such arrangements, many of the rules which regulate the appointment of teachers at present in most of the educational institutions would have to be substantially modified. Educational institution should also invite leading industrial managers and technical experts to give lectures on specific topics and subjects. Even a most busy executive would be tempted to undertake such an assignment as a challenge to his own abilities and experience.

Development of Curricula

The curriculum for a Master's degree or Bachelor's degree programme in any discipline should be prepared and finalised according to the needs of private and public sector industries. In this regard, institutions should invite specialists from industries and research institutions so as to ensure that the academic programmes are duly oriented to meet the requirements of industry. As the educational institutions are autonomous, they can prepare curricula according to the needs of the organisations which use their outputs i.e. students. For this purpose, the Board of Study must include the qualified and experienced personnel from the industry as members for preparing and modifying the syllabus to make it more industry oriented. In a number of educational institutions, this practice is very common though it is not effective to the desirable extent except in IITs and some other professional organisations which have been established to meet the requirements of industrial organisations.

Practice School

Some of the B. Tech. & M.Tech., theses may be planned in consultation with the practising engineers of the industry such that the students might have to spend some time, say 3 to 6 months, in the industry. The study report may focus on some aspects of plant operation or on experimental work conducted in the laboratory of the factory. The students may be given free boarding and lodging at factory premises during the study period.

Providing Facilities for Training

Any amount of theoretical knowledge without practical experience will not make a student of technology capable of taking up his profession with confidence. Theory must be tested against existing practices in order to make the theoretical knowledge purposeful and useful. Properly planned and effectively executed field work for reasonably long periods alone can ensure rich dividends from a technical education.

What goes on today in the name of practical training with industry wherever it exists, is indeed a mockery of the very idea of training. The students spend a few days holidaying through the corridors of the offices and the premises of the factories. Often, instead of getting any insight into the practical problems of their chosen fields, they come out with all sorts of funny ideas and misconceptions about the industry and its working. For this sad state of affair, the educational institutions or the students are not alone to be blamed. The industries should adopt adequate measures and provide financial incentives for motivating students to make the best use of their training period so as to make them an active agent of industrial revolution. A small amount of finance earmarked for such a purpose by the industry would go a long way to get the best out of the project. All this needs a willingness to take some initiative by the industry and extend its wholehearted cooperation to the cause of effective technological education. It is important to emphasise that industrial training could be made more meaningful and productive, particularly at the post graduate level if it is programmed in consultation with teachers of the institutes keeping inview the research and consultancy requirements of the industries.

Arranging Inplant Training for Students

The advances in technical education demand a purposeful system of practical training in the educational institutions and industries. Since a comprehensive practical training cannot be provided in the educational institution for different reasons, it is necessary to establish a liaison between industries and educational institutions so that the students will have opportunities to visit industries more often and spend a part of their time in the factory premises especially during vacation. Students who study their courses at the institutes will have the desirable exposure to the world of work which in effect will make their education and training more effective and productive.

Teacher-Centred Activities

Teacher centred activities are generally confined to training and recruitment of teachers, membership of teachers in governing bodies of industries etc. This type of activity has the three dimensional approach whereby students, industrial personnel and teachers are benefited.

Training for Teachers

While training for students is considered important and quite a number of schemes are existing for this purpose, it is essential to train the teachers as well particularly on the practical side of their subjects of specialisation. Not many such schemes are presently available. A teacher, working even for a short period in his own field of specialisation in an industry, would find it as a very rewarding experience. An opportunity to work and study in an industry would help a teacher to broaden his outlook and provide him an opportunity to grasp the practical aspects of various problems. The proverb that "what you read you forget, what you see you remember and what you do you understand" is true equally to students and teachers. Such experience would surely help him in his own sphere of research and development and more importantly help him in understanding practical aspects and requirements and would develop him to train the students better at the levels of both under graduate and post graduate. The staff of industries would simultaneously benefit from such periodical visits to an industry by an 'academic person' who would provide an opportunity to the persons concerned in the industry to discuss some theoretical problems in detail.

In view of the foregoing, the problem of preparing the teachers to equip himself adequately to meet the challenge of his profession, can be tackled by industry alone. Industry must provide opportunities and the necessary facilities for teachers. One way of doing this is to welcome those who are engaged in research to collect relevant materials and data and assist them in every possible manner to conduct their investigations satisfactorily. Many industries are reluctant to extend these facilities. In fact, most of them look upon such research workers as a nuisance if not interlopers or undesirables to be let in. This attitude has to be changed. It should be remembered that every successful research scholar is a potentially competent teacher, who will handle his classes with intimate knowledge of the practical problems of industry if he has had opportunity to study at close range.

Another possible way is to give interested teachers full time assignments in industry for varying periods of one to three years. Wherever possible, this should be done on an exchange basis between the industry and the educational institution although this is a formidable problem under our present system of rigid organisational constraints. If this is not practicable, industry should at least show its willingness to accept a teacher for a specified period as and when an educational institution requests for such an assignment with a view to developing the professional competence of the teacher. On its part, the educational institution should make such an arrangement a regular and continuous feature in the process of building up a competent faculty.

The next possible way is to encourage teachers and technical men from industry to work in collaboration on problems of common intestests. Specific problems can be assigned for such collaborative ventures which are bound to prove stimulating for both parties and mutually rewarding for the institutions. This is perhaps the most effective way in which theory and practice can supplement and compliment each other and the frontiers of technological knowledge can expand and intensify for the betterment of the society and the economy. Such collaborative ventures are of immense success among the technologically advanced countries.

Full time Industrial Experience for Engineering Teachers and Researchers

Educational and research institutes should permit and encourage their staff members to spend some period every year in the industry as full time employee ranging from a month in the summer to a year on leave from the institute without causing any loss to the facilities like continuity, usual annual increment, and residence in the home campus as well as in the factory campus.

The industry should pay some maintenance allowance if not salary to the teacher or researcher working in the factory. In addition, the teacher (or the researcher) should be paid for his occassional travel to keep up his research programmes at home campus. Because of the want of experience, teachers or researchers become disqualified for an appointment in industry which causes frustration among engineers in teaching and research profession. The industrial experience, thus earned, should be considered as an added qualification for promotion and other professional benefits. Such an approach would bring about considerable improvements in industrial productivity by way of stimulating the process of learning and skill formation.

Membership of Governing Body

Eminent educationists/academicians should be nominated on the Board of Directors of industries and the leaders in industry on the Boards and Advisory Bodies of educational institutions. This method of sharing expertise in techniques of management of institutions and industries, which is already in practice to a limited extent, would go a long way in promoting their partnership for accelerating the pace of development.

Provision of Resources

The industries can make substantial contributions for promoting excellence in teaching and research by way of providing the needed resources especially in the forms of donation of laboratory equipment, research fellowships and endowed chairs.

Industry Contribution for Research Facilities

The industrial enterprises can provide substantial foundation funds to build research facilities. The linkage and cooperation between local companies and a university's administrator could facilitate the creation of infrastructural facilities with the university for the benefits of its own teaching and research assignments as well as the company's research needs.

Donation of Laboratory Equipment

The Companies and the manufacturing houses some time donate equipment to local universities to upgrade research and training facilities in an area of their interests. Such assistance help built up the university's technical capabilities and are useful for both teaching and research purposes. It is seen as a way to foster good communication between university and industry.

Industry Funded Research Fellowship

The research fellowship support is an integral part of a more extensive cooperative university-industry programme. It is also a mechanism used by companies when they have limited funds to spend on university research especially in the areas which support the companies programmes. It is a way of getting a higher value for their limited research fund. It also provide an incentive to the recepient of the fellowship, who after the completion of the study get absorbed by the companies.

Industry Endowed Chair

The chairs can be established in academic institutions by industrial organisations to carry out high quality research in the specialised areas. A number of industrial organisation like BHEL have already established chairs with the educational institutions. Most of the universities seek to increase the number of industrial endowed chairs within their science and engineering departments, because this is a mechanism, whereby the institutional programmes are funded.

Other Collaborative Activities

Under this category, the other possible forms of university- industry collaboration may be included especially those having joint research endeavours, cooperative participation of university and industry scientists in contract research. In such cases the two parties jointly plan their research programmes.

Conduct of Research Relevant to Industry

The practice of industry entrusting educational institutions with research assignments is very limited to the institutions of national importance like IITs. On the one hand, industry has no confidence in the ability of the educational institutions to deliver the goods, the latter, on the other hand, are yet to demonstrate their interest and competence to deal with the practical problems which confront the industry. Our governments, both at the Centre and the States, are equally responsible for creating such a situation as no worthwhile effort has been made to promote their interactions. They are yet to make a worthwhile beginning in this direction, while the advanced countries spend several millions of dollars annually to finance research projects entrusted to universities and other higher educational institutions and the finances are made available through the industries.

Undertaking research on the problems of industry by educational institutions means the handling of such problems in the class rooms and the laboratories of these institutions. That is one of the surest and most effective way of building up a faculty deeply involved in practical problems and preparing a student body ready to deal with such problems as and when they come out and take up positions of responsibilities in industry. It helps, moreover, in abridging the gulf that separates the academic and the industrial worlds.

It would therefore be desirable that all the large scale industries should establish their own research and development wings which should work in close liaison with educational institutions. A broad division of work can also be made such that theoretical researches could be undertaken in educational institutions and the applied researches could be carried out in industrial establishments. It is possible for technological institutions and research organisations to inform industries about their facilities for research and development as also the progress of the various projects undertaken periodically. This would facilitate the industries taking advantage of expertise available with these institutions.

Another area in which industry can render assistance to technological institutions is the area of scholarship and fellowship or some other financial assistance for attracting talented graduates and also for setting up pilot plants, experimental workshop, production centre etc. There is also considerable scope for undertaking joint investigation and research activity relating to projects, processing of material etc., including faithful copying of foreign products and machinery. Moreover, joint studies can be undertaken on such important problems as air pollution, water pollution, transportation, location of industries etc. which are of great regional and even national significance.

In this context, the formation of Research Councils to improve the interaction between the two sectors is highly desirable. These research councils will consist of specialist members from faculty, research institutes and R & D wing of industry. The specific problem of industries could be referred to the council which will plan for the development in a way that the work can be started simultaneously at different laboratories of the educational institutions as well as that of R&D wings of the industries. Meeting of the Council should be held frequently so that the plan of the work can be assessed from time to time. The research expenses may be borne in part by the participating organisations depending on the nature of the problem and mutual arrangement in such ventures.

Government Funded University/Industry Cooperative Research

Some times universities and industries come together to conduct research as part of a national effort in a particular area especially through the governmental efforts. Cooperative industry/university research proposals are prepared jointly by academic and industrial researchers and submitted jointly to the concerned institutions. Such an approach encourages joint efforts to solve the national problems. The success of such mutual endeavours is dependent on (i) strong and active research collaboration between university and industry researchers in the performance of the proposed project so as to ensure industrial relevance of the research (ii) significant costs sharing by the industries and (iii) high quality of proposed research.

In addition to joint research projects, the government's research sponsoring agencies also provide fund for carrying out research projects in the areas of industrial relevance. In this regard, university professors submit their research proposals directly to the sponsoring agency for necessary funds. The academic staff of educational institutions are needed to be encouraged under such programme, as above, by way of providing the physical and financial resources for carrying out research activity of high standard.

Research Problems for Dissertation/Thesis

The topics chosen for dissertations and theses of the post graduate students should be in an applied and problem oriented areas of specialization. Wherever possible, before the actual commencement of the thesis work, the candidate and his guide should explore the availability of the facilities for research and accordingly take a decision about the scope and objectives of the research thesis, the findings of which should be to the best advantage of the educational institutions on the one hand and industry research institute on the other.

Consultancy

Consultancy as a profession or occupation is still in its infancy in India. Although the big cities like Bombay, Calcutta and Delhi have a few well established industrial consultancy firms, their impact on industry as whole at present is negligible. But those who are aware of the role of consultants in advanced countries would not hesitate to acknowledge the very useful services they have been rendering to industrial vitality and technological innovation.

In India consultancy services are provided by a small educational institutions and that too, to a very limited extent. In view of economic and technological backwardness, the educational institutions can play a commendable role in the field of consultancy. This is because these institutes have the largest concentrations of the most qualified men in various areas of science and technology. If a problem which an industrial concern wants to investigate is entrusted to such an institute, it should be possible to deal with it satisfactorily by pooling the expertise available in the institutions. As the institutes gain more experience in this type of work, it can create suitable institutional machinery to handle the consultancy work.

A beginning has to be made in this new area in a vigorous way. The initiative in this regard should come from the industry and the educational institutions must accept the challenge. The Chief administrators of university/institution should encourage their staff members to industrial consultancy by creating facilities for this. The industry in particular should frequently communicate their problems to the faculty which might give rise to new educational programme of national interest. A portion of the R & D fund of the industry should be diverted towards this direction. Consultancy work in due course will immensely improve the quality of both teaching and research which would, in effect, turn out to be an advantage to the industry.

Information centre

The importance of communication-cum-information centre cannot be underrated. For promoting industry-institution inferface, some mechanism should be evolved whereby the relevant information could be exchanged and shared especially with regard to the available facilities with the institutions/industries, the ongoing activities and the developmental aspects which are to be tackled. Hence, it is desirable to have such central communication-cum-information cell.

Organising seminars

The conferences and seminars should be organised on subjects of mutual interest. This will go a long way in establishing a cordial relationship between educational institutions and industry. Needless to emphasise, the seminars and conferences provide a common platform for the industrialists and educationists for sharing views on the issues of common interest. For effective collaboration, it is necessary that this method should be adopted on regular basis in industry as well as in university so as to ensure closer ties between them.

Short term courses

One of the problems of industry is to keep their engineers away from obsolescence. In order to overcome this problem it is desirable to organise condensed refresher courses in the industry where specialists should be invited to offer such courses. The staff from industry can attend such courses so that they can keep abreast with the technical advances accomplished in their specialised fields. The curriculum should include sandwich courses and training programme as well. In brief, short-term courses should be pin-pointed and oriented to give a strong dose of knowledge within a short time. These courses need not only be theoretical but also may have a certain amount of practical and laboratory orientation depending on the newer instrumentation and equipment.

IV

University-Industry Interaction

The Existing Scenario

This Chapter seeks to present an array of current university- industry interactions in Indian universities. The analysis of information pertain to the seven universities and university- level institutions in respects of the Faculties of Engineering and Technology, Natural Sciences, Commerce and Management and a few departments of Social Sciences. A distributional analysis of the number of departments of various institutions from which the relevant information have been gathered and analysed is presented in Table-1. For analytical convenience, the different forms of interactions are divided into four major categories namely

1. General Research Support;
2. Cooperative Research;
3. Knowledge Transfer; and
4. Technology Transfer

Table-2 presents the variety of interactions which are observable in the campuses of the select universities.

General Research Support

The general research support from industries to universities usually consists of gifts in the forms of money and equipment for strengthening of university research. Table-3 present the relevant data pertaining to financial support provided by industries under various collaborative programmes. The major objective of this type of collaboration is to provide support for maintaining excellence in university research rather than for strengthening university-industry research ties as is evident from the following discussions.

Monetary Gifts

Monetary gifts from industry are valued highly by university authorities/scientists because these provide additional financial resources for carrying out researches in areas of both academic and industrial interests. Sometimes monetary gifts are also made available for supporting general researches carried out by graduate students. During our field survey, several Professors mentioned that unconditional 'grants-in-aid' (i.e. gifts) to academic departments were significant in terms of their impacts upon graduate programmes of studies. There was, however, a general feeling among the university professors/scientists that unrestricted gifts or grants-in-aid did not necessarily promote healthy interactions between universities and industries. This was somewhat contrary to the general expectation that monetary gifts could strengthen university-industry interactions. Several university scientists maintained the view that voluntary financial gifts by industries to universities were rare and difficult to obtain.

Donation of Laboratory Equipment

Out of the seven campuses we surveyed, four universities received equipment as gifts from industry. Actually, companies donated equipments with sponsored research projects. The university scientists stated that industrial equipment gifts, except under special circumstances, were not yet extensive. However, a few cases were cited by the scietists when companies donated equipment with the spnsored research projects without the money for their maintenance. Some academic personnel also stated that while the companies were willing to sponsor research projects, the departments/universities did not have well-equipped laboratories for carrying out the relevant research. The academic staff were also of the opinion that company donated equipments were often not useful even for sponsored research projects.

Another mode of supplying equipment was found to be the so called 'loan agreement'. In this type of arrangement, a company provides equipment to a university on loan basis, but retains the title in order to depreciate the value of the equipment. At the termination of the agreement, of course, the equipment reverts back to the university.

Industrial Contributions for Research Facilities

Industries occasionally give funds to universities to build research facilities or buildings. Sometimes, this is an out come of a university's general fund raising efforts.

Most of the academics/scientists, we interviewed, said that such funds were available on rare occasions. Most of the new laboratory buildings were built with governments/UGC funds. In the last few years, Govt./UGC for building research facilities have declined.

Industry Endowed Chairs

Industrial endowments for establishment of Chairs have been another source of support for univesity research in the Indian universities. The scientists who hold the industrially sponsored Chairs or Professorships were apt to be sensitive to the needs of the concerned companies. They arranged frequent meetings between company representatives and university personnel and encouraged discussions on problems of mutual interests.

All the universities covered by our survey were found to be actively engaged in seeking to establish industrially endowed Chairs within their science/engineering departments. However, IIT Delhi and M S University, Baroda were found to be particularly successful in attracting this sort of industrial support. IIT Delhi was found to have two endowed Chairs and M S University of Baroda one endowed Chair in the department of management education.

Cooperative Research Support

Cooperative research interactions require some degree of cooperative technical planning, at least in the initial phases of negotiation. The major objective of such support is to strengthen company and university research ties. We present below those categories of research support and interactions that provide for an element of cooperative research interactions between universities and industries.

Industry Funded Research Project

On many occasions, person to person interactions turns out to be the most important form of university-industry cooperation. Out of the seven universities we surveyed, two i.e. IIT Delhi and M S University of Baroda, stated such types of collaborations. In 1988, there were thirty-five industry-sponsored research projects to different departments/ centres in IIT Delhi, while in M S University, there were only five which were concentrated in the faculties of engineering and management.

An integral part of such research agreements was found to be the frequent contacts made among the scientists of universities and industries and provisions made for mutual exchange of scientific personnel. The principal investigators of these programmes almost always were found to have separate consulting agreements with the sponsoring companies. In most of the cases we reviewed, the scientists usually had previous research interactions with representatives of the concerned industries. Two company representatives mentioned that they would not consider such arrangements unless they knew the university scientists extremely well. Another prerequisite for such arrangements were stated to be the desire of a company to extend its research capabilities into new fields with a view to developing new products.

Cooperative research agreements were considered by many scientists to be the most important contributing factor in the processes of industrial innovation as these programmes provided long range time-frames which were congenial for innovative research. Such programmes also required a consistent level of funding, calling for, at the same time, considerable commitment on the parts of the universities and industries. The long term partnership contracts between universities and industries therefore required that atleast, in certain fields, both the partners should be capable of displaying such commitments. Some senior university scientists mentioned that continuous and consistent levels of funding provided by industries occasionally enabled them to carry on multi-disciplinary research and also to hire technical personnel not directly related to their immediate research goals.

Industry Funded Research Fellowship Support

Industrial support to research in the form of fellowships could be an important method of strengthening cooperative research ties. The number and amount of such fellowships reported were, of course, very nominal. Out of the seven universities we surveyed, three universities had such type of collaboration i.e. IIT Delhi, M S University of Baroda and University of Delhi. There were ten such fellowships provided by different industries in IIT Delhi, while in the M S University and University of Delhi there were four and two such fellowships respectively. The fellowships were generally provided to post-graduate and graduate students in engineering and management disciplines.

Government Funded University-Industry Cooperative Research

Funds for some of the cooperative university-industry research programmes are provided by many government agencies, including the Ministry of Defence and Commerce, CSIR, DST, Department of Energy and others.

In our survey all the universities, except Jamia Millia, reported that they had government sponsored research projects from such agencies like the CSIR, DST, ICMR etc. These projects were generally related to industrial problems. The funds, thus received, were however very limited.

Industry's Participation in Curriculum Designing

The curriculum for a Bachelor's and Master's degree programme in any discipline should be prepared and finalised only after extensive consultation with industries and related research institutions so as to ensure that the academic programmes could squarely meet the needs of the society in general and industry in particular.

In our survey, we found that in all the universities, except Bhopal and Rajasthan, faculty Chairpersons used to invite the industrial scientists for curriculum development. This type of interaction was mostly found to have occurred in Science, Engineering, Commerce and Management disciplines. Sometimes this type of interaction was also seen in the departments of psychology and social work. However, in IIT Delhi, this type of cooperation was a common feature across all the departments and centres.

Industry Funded Medals

While conducting our field survey and also reviewing of university publications like University Annual Reports, Budget Estimates etc., we found that all the universities except the universities of Bhopal and Ravishankar were receiving funds in varying quantities for awarding medals and prizes to brillient students. Maximum number of such medals were awarded in IIT Delhi, where thirteen private industries were awarding such medals; while in the University of Rajasthan, Baroda and Delhi seven, four and three private industries respectively were offering such medals.

Knowledge Transfer

Transfer of knowledge can be facilitated in a variety of ways. Knowledge transfer mechanisms mainly through personnel interactions are important in forging stronger research ties between universities and industries. They involve both formal and informal programmes that may or may not have scientific or technical knowledge transfer as their primary purpose. In our survey, four industries were asked as to which type of collaboration with university they would prefer. All the four were in favour of personnel interactions.

Personnel Exchange

Personnal exchange between universities and industries is an important form of university-industry corporation. The practice of personnel exchange is implemented through both formal and informal programmes such as visiting professorships, assignments at universities in area of mutual interests, consultancy, seminars, participation in intensive workshop and lectures by industrial scientists etc.

A majority of academic staff contacted by us expressed the view that personnel exchange, when it occurred was a fruitful interaction. However, the formal university-industry exchange programmes at institutions like IIT Delhi and university like M S University, Baroda were institutionalised. In the remaining five universities, a limited number of staff participated in personnel exchange programmes.

Faculty members from IIT Delhi, indicated that a small number of scientists came from companies on a temporary basis to conduct research at the institute and all these were successful ventures. In these cases the companies sent their staff for conducting research and paid their salaries and the institutional fees etc.

In one programme, a faculty member of IIT Delhi worked at a local company, while two scientists from that company came to the institution to conduct research. This programme was a success. Those who came to the IIT from industry brought an industrial research approach which served to broaden the knowledge of faculty members and students. On the other hand, the professor who went to the company came back with a new outlook.

A large number of scientists from universities and industries interviewed stated that they would welcome improved formal programmes of personnel exchanges and would welcome new initiatives in this area. Subbatical programmes at industries are of increasing interest to both university and industry scientists. Sometimes personnel exchanges emanate from an opportunity to participate in consultation projects.

At the time of survey, we identified certain difficulties inherent in personnel exchange programmes. For instance, first the problem of disruption of family life. Second, if a company was having economic problems, it would fail to encourage this type of programme. Third, if the subject area was in the high technology field, or a fast moving field of science, it created problem for the university scientists to be out of contact with his department for long and it was also difficult for the industrial scientists to be out of contact with their industries for long. Therefore, if such programmes were institutionalized, a scientist might be assured of a position equivalent to or better than the job that he might have to leave. A few university scientists expressed concern that the faculty members, after working in industry, would be tempted to remain there due to offer of higher salary.

A majority of the staff were of the view that any workable and large formalized exchange programme would have to be flexible in terms of supportive time and resources. Most however felt that one to two months was a reasonable length for a good and fruitful interaction since one year would be too long for those concerned about career development.

Mechanisms for stimulating Personal Interactions: Advisory Boards, Speakers Programmes, Exchange of Publication.

The practices of fostering personal interaction such as representation on advisory boards, participation in speakers programmes, exchange of publications and adjunct professorship, were pointed out by most of the respondents as activities which could lead to greater cooperation between universities and industries.

Many faculty members from IIT Delhi and from universities like M S University of Baroda, University of Delhi and Ravishankar University stated that they were affiliated to different industries as advisors/ consultants. Such mechanisms allow the university staff to acquire first hand information about the industrial problems. It was interesting to know about the existence of a Committee in the Department of Textile Technology at IIT Delhi i.e. Industry Interaction Committee, the memberships of which included twelve industry scientists besides the faculty members. This Committee was bridging the gap between textile industries and the department of textile technology at IIT.

Adjunct professorship can provide a solid base for continuing knowledge transfer from institution to industries. In this case, where a professional is an adjunct professor at an institute the company pays his salary for the period of his stay at the institute. But in our survey of seven campuses, we could not find any Adjunct Professorship in any university/institute.

Consultancy

Consultancy as a profession of occupation is still in its infancy in Indian universities, although reputed technical organisations like IITs have a few well established consultancy services. These institutes can play a very important and useful role in the field of industrial consultancy as they have the largest concentrations of the most qualified personnel in various areas of science and technology. If a problem which an industrial concern wanted to investigate was entrusted to such an institute, it should be possible to deal with it satisfactorily by pooling the expertise available in academic departments. As the institutes gain more experience in this type of work, they can create suitable institutional machinaries for handling consultancy works which should in due course improve the quality of both teaching and research.

The result of our field study of seven universities/institutes showed that in IIT Delhi, most departments had consultancy activities as a regular feature. Among the universities, while M S University and University of Delhi had consultancy activities, others did not have any such programme. The popularity of consultancy was found to be associated with certain academic fields. It was frequently stated by most of the interviewed staff that consultancy in engineering faculty was at a much higher level than in either management or science departments. In the technical units of the universities, consultancy activities were most prevalent in the engineering departments due to the applied nature of their teaching and research programmes. At IIT Delhi, the general feeling was that one's excellence as an engineer was somewhat substantiated by his demand as a consultant by industries. It was also viewed that if a professor did not have extensive consultancy activities his professional competence was suspected because he was not then supposed to be conversant with of real problems of the industrial world.

IIT Delhi has established centralized listing of all the research interests and activities by its faculty members. It is thus possible for the industrial firms to come to the Institute with a particular problem and find out if the Institute had people with the required capabilities and expertise. This referencing system is used for contract work as well.

Industry's Participation in the Teaching Process

This form of collaboration is usually initiated from the very beginning, namely, the determination of the objectives of the different programmes or courses of study, preparation of curriculum and course materials etc. Industry should offer the services of some of its senior personnel either on a full time basis for a period of one or two years, or on a part time basis, so as to ensure a certain percentage of the teaching staff could be taken from the practical world of industry. In advanced countries, particularly in the United States and Canada, this is a common feature. The arrangement is mutually beneficial as the deputed person while returning to the parent institution also carries along with him new knowledge and fresh outlook.

During our field survey, we found that except in the cases of Jamia Millia and Bhopal universities, all other universities invited industrial personnel for teaching activities, particularly in the engineering and management disciplines. This type of arrangement was not seen in the JamiaMillia Islamia and Bhopal University, perhaps because these two universities had no engineering and management disciplines.

Seminar and Short Term Courses

One of the methods of university-industry collaboration is organisation of seminars on topics of mutual interests. Academic personnel in all the universities surveyed by us stated that they attended seminars/workshops organised by industries. However, there were only four campuses where seminars were sponsored by industries i.e. IIT Delhi, M S University, University of Delhi and University of Rajasthan.

Another area where fruitful university industry cooperation could be expected was arrangement of short-term courses by universities in the newer branches of technology for the benefit of engineers who are serving in industries.

Out of the seven campuses we surveyed, only four were found to have been offering short-term courses of industrial relevance. The Ravishankar University offered such courses in the area of Industrial Psychology, while Delhi University maintained a University-Industry Interaction cell which Inter-alia was responsible for imparting short term courses of industrial relevance. The M S University, Baroda, was found to have been offering short-term courses of industrial relevance in such areas as Engineering and Management, while such courses were found to be available in all the departments of IIT, Delhi.

Technology Transfer

Programmes structured with a view to capitalising on University research or integrating technological results of research into private sector programmes or commercial products can be characterized as technology transfer mechanism.

Such programmes are designed to:

i) Address specific research problems of a company
ii) give technical assistance to companies in need of developing new product lines; and
iii) provide technical assistance in the development of a totally new business, or help entrepreneurs initiate their own high technology companies.

Extension Services

Extension services are essentially used as means for bringing technical assistance to small companies or helping industry develop in rural areas. They constitute a service rather than a mechanism to facilitate cooperative teaching/research. However, these do help in the establishment of a network of contacts and make the universities more sensitive to the industrial needs.

During the field survey, we found prevalence of extension services in IIT Delhi and M S University, Baroda. This type of cooperation exist particularly in engineering departments of both the universities.

Innovation Centre

Innovation centres are means of helping entrepreneurs for developing skills through prototypes to the point where they can start their own businesses. The major goal of these centres is the initiation of academic programmes to facilitate the work of young inventors and entrepreneurs.

Our survey of seven university campuses indicated that there were no innovation centres in these institutions. But in the faculties of Engineering and Management of four universities (i.e. IIT Delhi, M S University of Baroda, Delhi University and Rajasthan University) there were programmes for students who wanted to develop entrepreneurial ideas and skills.

Initiation of University-Industry Interaction

During our survey visit to the seven selected universities, we also tried to collect opinions of the university personnel on the existing programmes of university-industry interactions. Table-4 presents a total of 426 ongoing interaction programmes out of which 60 per cent were initiated by the universities. Out of a total of 254 university-initiated programmes, 174 were in the knowledge transfer areas, followed by the areas of cooperative and general research support i.e. 45 and 30 respectively.

Industries initiated 17 per cent of total collaboration programmes covered by our study. Out of these 50 programmes were in knowledge transfer category, followed by the categories of cooperative research support (14), general research support (8) and technology ransfer (1). About 11 percent of total interaction programmes were initiated mutually by universities and industries while the remaining 12 percent interaction programmes occured because of universities having prior relationships with industries & vice-versa. The details of university-wise interaction programmes and the information about their initiator have been presented in table 5.

In our discussions with university staff we were given the impression that university-industry research interactions were considered desirable by both the parties. There was also consensus that there were no insurmountable barriers to joint university-industry research interactions. Some of the obstacles indicated by the university staff are: pre-publication review requirements and information dissemination restrictions of research findings, shortage of staff in academic departments and scarcity of laboratory equipments. Out of these, the last two were considered to be the most pressing by the university personnel. Table-6 present the detailed analysis of responses from the senior academic staff of various institutions, who have given their opinions about the factors that are responsible for low level of partnership between the institution and industries.

V

PROMOTION OF LONG-TERM LINKAGES BETWEEN UNIVERSITIES AND INDUSTRIES

This chapter summarises several recurring themes and debates regarding university-industry interactions. An attempt is also made to raise some of the major issues pertaining to the promotion of long term linkages between universities and industries. The entire gamut of issues pertaining to such partnership are discussed under the following major categories.

The Significance of Current University-industry Interactions

In spite of the significance of university-industry interaction in promoting the processes of teaching, research and the consequent improvements in productivity and income, the direct financial support provided by the industry have been negligible. Out of the seven institutions surveyed by us only two were found to have received funds from industry to the extent of 18 percent and 3 percent of their total research funds (Table 3). The contributions of industries in relation to the total income is very meagre even in respect of technological institutes like IIT Delhi.

The dialogue between academia and industry has however increased and there seems to have been greater appreciation of mutual interests and problems as well as the respective goals especially those relating to the professional excellence and the well-being of people . This has apparently led to an increase in frequency of professional contacts between the two sectors. Because of the importance of prior contacts in the initiation of cooperative research programmes, the building up of a network of relations between universities-industries would facilitate the task of accelerating the pace of economic and social development.

While the partnership between industries and institutions are increasing rapidly, this phenomenon is limited to a few industries and institultions. Furthermore, although there is a wide spectrum of companies interacting with universities, there are very few which do so on a significant scale and on a continuing basis. Currently as is true historically as well, the most active industrial group, in all forms of university research support, and particularly in cooperative research interaction has been the electrical industry. The reasons as to why other types of industries are least interested or active in such partnership is difficult to discern at this stage.

While it is not clear whether external stimulus is necessary for promoting university-industry interaction, some degrees of government support see desirable and it is indeed. critical in many instances. The partners themselves have however been the key elements in successful development of programmes of mutual benefits. The Government, as a facilitator, can ensure that there is an appropriate climate for networking across the sectors, and may create conditions for increasing contacts and cooperation between the two sectors.

The Government support for basic research cannot be fully compensated for by industry nor the total financial requirements for carrying out R&D activities could be met by the latter. It is therefore important that government should strengthen the system of funding research so that university and industry could mutually agree to cooperate in the developmental potential of basic concepts particularly in the frontier areas of knowledge and technology for the following reason. The academic and theoretical researches in the fields of science and engineering subjects do not directly constitute the productive forces. These are in fact a pursuit for understanding and as such call for exploration of a variety of alternatives. The productive forces relate to the mechanisms of screening these alternatives after their characteristics have been better revealed. Industry, in some sense, cannot be expected to fund broad based exploration, but it would be of great value to industry to be able to tap into this exploration which have a direct bearing on productivity and the profitability. In view of this, industry can and should be able to fund the screening and testing of alternatives. It follows that the interests of each party must be clearly identified so that a proper understanding could be developed with a view to ensuring a successful outcomes of partnership between industries and institutions.

Commercialisation of University Research

There is an increasing awareness on the part of universities – faculty and administration – to the opportunity for obtaining income from the commercialisation of university research. Universities have evolved a moderate source of income over the years from licensing of patents based upon their own research.

The concern for raising university finances creates a steady pressure on universities to move towards activities providing new sources of income through commercialisation of university teaching and research. As the level of Government funding has reached almost to the saturation point, the universities are in pressing need to mobilise resources from alternative sources especially industries. Such concerns provide essential stimulus for attracting and retaining competent staff in financially lucrative fields such as biotechnology, computer sciences etc.

The debate within the university centres largely focus on as to how the university can obtain additional income from participation in commercial ventures while maintaining its integrity and basic values associated with the concepts of education and development. A number of serious questions arise concerning research priorities, criteria for selection of faculty, selection of graduate students based upon criteria related to ultimate commercial interests, effects of secrecy in research on community interaction and information dissemination, and possibly the damaging effects on university-industry relations of university equity participation in new commercial ventures.

Instrumentation and Research Facilities

The condition of the physical infrastructure of university research is both a cause and effect of rising research costs. Modern research depends upon advanced instrumentation which invariably raises the capital costs per researcher. And when adequate funds are not available the quality of research suffers. The strengthening of the physical infrastructure is a critical issue to day, and will remain so. It affects both the training and research objectives which are sought by industry in its relationship with universities. The adequacy of university research facilities can alone stimulate and strengthen the cooperation between the two sectors. This, therefore, requires identification of (i)means of financing research facilities including instrumentation(ii) the select institutes which should be encouraged for developing research capabilities and (iii) the mechanism of sharing the common facilities. Thus, without the development of research resources, the promotion of partnership will remain an elusive objective.

Changing Requirements for Technical Personnel

There are instances of extreme shortages of experts in particular areas, and one may anticipate continuing and emerging shortages in others. Simultaneously, there is a low demand and/or underemployment inome technical disciplines. This situation raises several issues related to the nature and extent of university-industry cooperation.

The primary objective of industry in its interactions with university system is to ensure the production of new graduates with adequate knowledge, skill and training which are needed for boosting the industrial activities. There have however, been ups and downs in the individual fields of science and technology, relative to other fields, appearing almost as short term perturbations within the general cycle of supply of and demand for various types and levels of educated manpower. Industrial demand for technical personnel appears to be affecting the traditional university structure in two ways:

i. Fewer doctoral candidates: Graduates in computer sciences with bachelor's degrees are going directly to industrial carriers, with a smaller proportion than expected going on to for a doctorate degree. This diminishes the pool of those pursuing advanced research and for those available as future faculty; and

ii Drain of advanced university personnel: In computer sciences and genetics (as well as some engineering disciplines), both faculty and new doctoral graduates are turning to industrial positions. This drain to industry raises critical questions about the resources available for training the needed future graduates and maintaining the desired research base at universities.

The problem of mismatch between the supply of and demand for specialised manpower could be tackled by mutual sharing of resources, in which case the industry would have the benefit of specialized services of university staff while the latter would attract funds for financing teaching and research programmes.

Collective Industrial Activities

The promotion of collective industrial activity is another method of rectifying the deficiency in infrastructural facilities for research among the educational institutions. The collective efforts initiated by industry are generally in the form of industry-oriented institute which is supported by several companies.

There are several issues related to such collective industry actions. First, a major purpose is to use collective action to supplement, not to replace, support of university research by the individual companies. How best to do this, and how to maintain ties between the individual companies and the appropriate university personnel are subjects for continuing attention and discussion

The second issue is as to what role the Government might play as different industries collectively increase their own support of the science and engineering relevant to their needs. If the trend continues for collective industry action to identify and support relevant needs in a mission oriented field, much of the justification for support of research by the Government might then intensify in the area of general infrastructure for pursuing teaching and research in the area of basic science and technology.

The third issue is related to the fact that collective industry actions will inevitably strengthen particular areas of the branches of science and engineering, and most probably, particular departments and universities. Industry is free to concentrate its spending on the most appropriate institutions in its fields of interest without any external influences. If sufficiently concentrated, such funding will have the desirable impact on the development of select universities.

The overriding issue, however, is as to how to ensure that the industry support of university research maintain balance and provide new inputs for widening the technical base. The extent and the magnitude of industry support in the foreseeable future should be such that increased university-industry cooperation could bring about desirable technical change in every sphere of development. The Government through its own mechanism should make positive interventions for sustaining an appropriate balance in respects of funding educational programmes across the institutions and disciplines.

Non-University Training

There appears to be an increasing involvement of non- university organisations in initiating or expanding programmes intended to provide some form of organised advanced education and training that do not involve the participation of a university.

A wide range of courses having direct relevance to industry and business are organised by the professional societies with a view to providing advance technical training. The nature of courses and training may be categorised as under:

i. A particular subject that would add specific knowledge in a new field for current employees;
ii A formal set of courses that would permit existing technical employees to keep abreast with the new advances in their fields of specialization or provide the basis for a switch over to a new field;
iii A formal set of courses for new employees that would acquaint them with the theoretical and experimental state of the art in industry, assuming of course, that such courses were more advanced than their previous university training as perhaps in computer sciences; and
iv A formal degree-granting programme run by a companyor industry for either current employees who wish to advance themselves, or potential new employees required by the company or industry.

The first two categories have been common over the years. They address questions about obsolescence of individuals or the decline in relevance of technical fields. While these problems are often solved with the cooperation of local universities, they may indeed be organised by a company or industrial organisation in order to tailor the material to the knowledge available within that company or organisation.

The second two categories, however, may take on more significance in terms of the ability of universities to deliver services in rapidly advancing high technology industry fields. To some extent they address the questions of personnel shortages in these fields, of loss of faculty that could teach these subjects in a university, and of the university lagging behind industry in the use of the most advanced research facilities in imparting knowledge. If the problems engending the apparent growth in industrial training programmes are short-term, the issue and mechanisms will disappear or at least level off to find a modest place in our technical struture. If the problems remain, or even if the mechanisms remains at a high level as a continuing feature of technical training, then a new set of questions arise for the university, and for the university/industry cooperation.

There are clearly opportunities for training outside the university system that can complement the university's role. Occasionally, industry is at the vanguard in developing exploratory or innovative teaching programmes that can point the way to new initiative for the university. The growth of such external programmes should atleast stimulate both analysis andintrospection by universities in examining their optimum role in scoiety in general, and with regard to industry in particular. It must be noted that the failure of universities to provide education and training in emerging areas of science and technology would considerably lessen their importance in the context of developoment, the implication of which would be the steady deterioration of university system and its contributions to economic and social progress.

Internal Structure of University

The primary and unique function of a university is to provide students with a broad range of disciplines and curricula resulting in the awards of degrees/diplomas. A principal additonal function, particularly within university faculties, is the pursuit of research. The interdependence of the two objectives of education and research is considered to be critical.

Although industry interacts with universities for the same objectives and with almost the same order of priorities, its own structure and organisational approach to research is different than that of a university. One can reasonably expect that some organisational structure within a university is optimum for the objective of encouraging and improving the effectiveness of such interactions. This does not mean however that the structure of traditional internal operations of a university is reasonably satisfactory. The issue raised as a factor in future university/industry cooperation is as to how to modify the university structure to maintain the strength and integrity of its basic functions while attempting to meet changing external conditons and internal pressures.

There are many structural aspects of a university, the most important among them are :

i. Grouping of scholars by disciplines, with academic administrators responsible for traditonal discrete institutions;
ii. Appointment bestowed by departments; and

iii Tenure granted by faculty within a department generally tied to teaching obligations.

The elements have evolved with the growth of the modern university. They are at the heart of the freedom and objectivity of scholarly research. They encourage and strengthen individual research. Unfortunately, they also form disincentives to inter-university research, which focusses on a mission or objective that may call for coordination of contributions by many disciplines. Yet that is precisely the essence of industrial research. Industry relates its technical needs to business planning in terms of products and processes, and sets technical priorities in terms of properties and specifications.

The issue before the university is to be aware of the **interdisciplinary** approach inherent in industrial research **and** explore its own flexibility to meet such requirements. Such exploration is evident in the creation of research centres and institutes to form a type of matrix structure at some universities. Where these institutes are within a well defined department, they tend to lack the broadest attributes of a mission - oriented structure. Where these are free of this constraints, there tend to be strains between those personnel on research appointments at the institutes and the traditional department appointments. These are, some problems to be resolved.

The latter is, however, related to the question of tenure appointments and criteria. While there has been steady growth in university personnel engaged in R & D, it does not normally open up new career opportunities unless tied to teaching programmes. This is a critical structural question for the universities, particularly in areas of shortages of teaching staff. If industry were to make substantial funds available for research in particular areas, but the universities could not make tenure track appointments, there would probably be little change in the research capabilities of the universities

Gaps in Communication

A number of professors interviewed by us mentioned that they received little or no industrial support. While they were not specifically negative towards industrial support, they held the view that industry had no interest in what they were doing, or that what they were doing was of no immediate value to industry. Therefore, they had not considered seeking industrial support. Furthermore, they were not aware as to how to approach the industry. To some extent, the perception of the lack of immediate relevance of their research to industry was found to be quite comprehensive in their attempts to keep themselves appraised of research relating to their interests. Through technology scanning activities, the industry executives generally discovered those in the university community doing research of interests to them. This calls for improving the communication channel between universities and industries in respects of the services they can render to each other.

Table 1

Distribution of Faculties/Departments - By Institution

University/ Institution	Number of Departments				
	Social Sciences	Commerce & Management	Natural Science	Engg. & Tech.	Total
IIT Delhi	1	1	5	14	21
M S University	5	3	5	8	21
University of Delhi	5	2	10	10	27
Univ. of Rajasthan	4	3	8	-	15
Jamia Millia	4	1	5	3	13
Bhopal University	3	2	5	-	10
R S University	4	-	5	-	9
Total	26	12	43	35	116

Table - 2

Types of University-Industry Interactions within Four Major Categories

General Research Support	Cooperative Research Support	Knowledge Transfer	Technology Transfer
1. Monetary Gifts	Industry funded contact Research Speciic to Research Programme of Project	Personnel exchange	Extension services
2. Equipment donation	Industry funded Research Fellowship	Mechanism for stimulate personal interactions - Advisory Board, Seminars Speakers programmes, Publication exchange	
3. Industrial Contributions	Govt. funded University/Industry Cooperative Research	Consultancy.	
4. Industrial Indowed Chairs	Jointly owned or operated facilities and equipament	Adjunct professorship	
	Informal cooperative interaction-co-authoring papers, equipment sharing, information sharing.	Industry's participation in the teaching process	
	Preparation of curriculum	Seminars and short-term courses	
	Industry funded medals		

Table - 3

Source of funds for Research & Development, 1986-87

(in Rs. lakhs)

University	Sources of funds				Total
	Govt.	Sponsoring* Agencies	University	Industry	R & D Expenditure
1. IIT Delhi	186.7 (53.19)	99.5 (28.35)	-	64.8 (18.46)	351.00 (100.00)
2. Univ. of Delhi	8.3 (3.61)	221.9 (96.39)	-	-	230.2 (100.0)
3. M S University	35.7 (65.50)	16.3 (29.91)	0.9 (1.65)	1.6 (2.94)	54.50 (100.0)
4. R S University	2.9 (34.12)	4.4 (51.76)	01.2 (14.12)	-	8.50 (100.0)
5. Univ of Rajasthan	16.2 (32.14)	34.2 (67.86)	-	-	50.40 (100.0)
6. Bhopal University	0.3 (3.53)	8.2 (96.47)	-	-	8.50 (100.0)

Source: Universities Budget Estimates for the Year 1988-89.

Note: Figures in Parenthesis are the percentage to total R & D expenditure.

* These agencies include the Council for Scientific and Technology, Indian Council for Medical Research etc.

Table 4

Initiation of University-Industry-Interaction

	Types of Interaction	Initiator				Total
		University	Industry	Mutually	Prior Relationship	
1.	General Research Support	30 (1.0)	8 (1.9)	5 (1.2)	4 (0.9)	47 (11.0)
2.	Cooperative Res. Support	45 (10.6)	14 (3.3)	12 (2.8)	14 (3.3)	65 (20.0)
3.	Knowledge Transfer	174 (40.8)	50 (11.7)	28 (6.8)	32 (7.5)	284 (66.7)
4.	Technology Transfer	5 (1.2)	1 (0.2)	2 (0.5)	2 (0.5)	10 (2.3)
	Total	254 (59.62)	73 (17.14)	47 (11.03)	52 (12.21)	426 (100.00)

Figures in parenthesis are the percentage to total.

Table - 5

Institute of University/Industry Research Interactions
No. of cases of Each Category
(As derived from Interview Dates)

Research Interactions	Initiator									
	General Research Support					Cooperative Research Support				
Institution	University	Industry	Mutually Initiator	Prior Relationship	Total No. of Initiator	University	Industry	Mutually Initiator	Prior Relation-	Total No. of Initiator
1	2	3	4	5	6	7	8	9	10	11
IIT Delhi	26	8	4	2	40	20	8	4	3	35
Jamia Millia	1	-	-	-	1	1	-	1	2	4
Delhi University	1	-	-	1	2	10	1	3	4	18
Univ. of Rajasthan	-	-	-	-	-	2	-	1	1	4
M S University	2	-	1	1	4	10	5	2	3	20
Ravi Shankar Univ.	-	-	-	-	-	1	-	-	1	2
Bhopal University	-	-	-	-	-	1	-	1	-	2
Total	30	8	5	4	47	45	14	12	14	85

Research Interactions	Initiator										
	Knowledge Tranfer Mechanism					Technology Transfer Mechanism					G. Total
Institution	Univ-ersity	Industry	Mutually Initia-tor	Prior Rela-tion-ship	Total No. of Initia-tor	Univ-ersity	Industry	Mutually Initia-tor	Prior Rela-tion-	Total No. of Initiator	
	12	13	14	15	16	17	18	19	20	21	22 = 6+11+ 16+21
IIT Delhi	65	30	5	5	106	3	1	1	-	5	185
Jamia Millia	9	1	3	2	15	-	-	-	-	-	20
Delhi University	28	4	9	6	47	1	-	-	1	2	69
Univ. of Rajasthan	12	2	4	3	21	-	-	-	-	-	25
M S University	40	10	5	10	65	1	-	1	1	3	92
Ravi Shankar Univ.	5	1	2	1	9	-	-	-	-	-	11
Bhopal University	15	2	-	5	22	-	-	-	-	-	24
Total	174	50	28	31	284	5	1	2	2	10	426

Note: ** Prior Relationship include: Professor having previously worked in Industry; Personnel or Industrial contacts etc.

Table - 6

Barriers & Constraints to University-Industry Interaction prevailing in Seven Campuses.

University/ Institution	Types of Barriers						
	Pre. Pub. review require-ments	Information dessemi-nation Restriction	Shortage of staff	Scarcity of lab. equip-ments	Others*	Mixed responses	Total no. of Respondents
1. IIT Delhi	5 (14.7)	7 (20.6)	3 (8.8)	6 (17.6)	9 (26.5)	4 (11.8)	34 (100.0)
2. University of Delhi	2 (6.3)	5 (15.6)	7 (21.8)	6 (18.8)	7 (21.9)	5 (15.6)	32 (100.0)
3. M. S. University	1 (4.0)	2 (8.0)	7 (28.0)	8 (32.0)	2 (8.0)	5 (20.0)	25 (100.0)
4. Univ. of Rajasthan	-	-	4 (20.0)	6 (30.0)	2 (10.0)	8 (40.0)	20 (100.0)
5. R. S. University	-	-	7 ((58.3)	3 (25.0)	-	2 (16.7)	12 (100.0)
6. Bhopal University	-	-	6 (50.0)	4 (33.3)	-	2 (16.7)	12 (100.0)
7. Jamia Millia	-	-	7 (46.7)	4 (26.7)	-	4 (26.7)	15 (100.0)
Total	8 (5.4)	14 (9.3)	41 (27.3)	37 (24.7)	20 (13.3)	30 (20.0)	150 (100.0

Note: 1) *In this category we included in the barriers like, difference in the aim & value of universities and of industries, lack of flexibility in university structure and decision making policy of the universities.

2) Figures in parenthesis are the percengage to total number of barriers.

Encyclopaedia Making in Indian Languages

The three day National Seminar on Encyclopaedia Making in Indian Languages hosted and conducted by the Komarraju Venkata Lakshmana Rau Vignana Sarwaswa Kendram of Telugu University, Hyderabad from 13th to 15th November, 1990 was attended by representatives of encyclopaedia making agencies from Malayalam, Kannada, Tamil, Telugu, Urdu and Hindi languages. Sahitya Akademi was also represented.

In his inaugural address, Sri Krishan Kant, Governor of Andhra Pradesh and Chancellor of the Telugu University. stressed the need for wisdom that knowledge should aim at. Man today is on the brink of a self made disaster. He ought to see light, he observed. Sri N. Janardana Reddy, Minister of Higher Education, Government of Andhra Pradesh, declared open an exhibition of Encyclopaedia Volumes in Indian languages got up on the occasion. He also inaugurated the computer division of the Kendram. Prof. C Narayana Reddy, Vice-Chancellor of the Telugu University presided over the inaugural function and emphasised the value of Jnana and Vignana in shaping the nation's life.

The participants at the Seminar, held detailed discussions on all aspects of encyclopaedia making - data collection, processing, compiling, editing, publishing and distributing. Along with the subject component, aspects of language and style, patterns, types and contextual factors were also dealt with.

The Seminar identified the role of Encyclopaedia as (a) a compendium of knowledge, (b) a source of general reference, (c) an instrument of a continuing and distant education, and (d) as a means of socio-cultural transformation.

The Seminar took note of the following contextual factors as determinants of the nature, scope and pattern of encyclopaedia making :

(a) Exploding knowledge and its percolation into the various strata of the society in professions, occupations and commercial and other activities.

(b) Growing percentage of students receiving their formal education through the regional language and the consequential need for reference sources in those languages.

(c) Need for a national perspective in awareness and acquisition of information as to create a sense of belonging at the trans-regional level .

Without any prejudice to the already started and on-going projects in the various parts of the country, the seminar desired production of encyclopaedias at three levels in each language.

(i) For children and teenagers upto the standard of Higher Secondary/Junior College level preferably in subject-wise pattern.

(i) For students of higher education and elite seeking indepth knowledge in several disciplines upto the standard of postgraduate level, preferably in subject-wise pattern.

(iii) For the lay enthusiasts as a source-book of general information, preferably in the alphabetical order.

The Seminar felt the need for a common forum for all agencies engaged in preparation and publication of encyclopaedias of all types and hues, general or special, in order to exchange views, share experiences and to promote mutual co-operation in collection and exchange of material etc. For this purpose, the formation of an Association was suggested.

The Seminar considered it important for encyclopaedias in Indian Languages to provide information at three levels–Universal, National and Regional in a balanced way.

Since authenticity of material is the real virtue of any encyclopaedia, collection of information, data and appropriate pictorial material, which is by itself an enormous job has to be followed up by proper verification and attestation. At present, this ordeal is undertaken by every unit involving both time and money. So, the Seminar felt that the Government of India or an appropriate agency at the National level should undertake to establish a National Resource Centre which can collect, preserve, revise and update encyclopaedia information and make available to the various agencies for their use. Such a Centre, if carefully designed, may coordinate the efforts of the regional Agencies and lend their work a national character.

The Seminar felt that in addition to what a proposed National Resource Centre could do, the regional agencies will have to supplement the information pertaining to the region, specially in humanities history, language and literature, fine arts, socio-cultural life etc.

The Seminar reviewed the financial position of the regional agencies in general terms and strongly felt that a comprehensive policy of financing the projects with a suitable formula to cover the establishment, equipment, costs of preparation and publication should be evolved by the Governments at the States and the Centre.

The Seminar also desired that considering the importance of the work and its significance to the nation, appropriate status should be accorded to these agencies.

In order to see that the products reach the people, it will be necessary to plan for printing them in good number and distribute them at subsidised rates. An automatic system of directly supplying the copies to all libraries and educational institutions may also be evolved.

A Colloquium on the New Education Policy

The National Law School of India University recently organized a colloquium amongst teachers, student representatives, educationists, administrators, social activists and media persons to discuss the approaches in evolving the New Education Policy by the Review Committee appointed by the Government of India earlier this year. The meeting was attended by nearly 300 persons which included Prof. S.C. Bhatia of the Department of Adult Education, Delhi University and Fr. Kunnunkal, Member of the Review Committee. Dr. N.R. Madhava Menon, Director, National Law School of India University moderated the discussion.

The day long deliberations brought to focus a number of dominant themes which agitated the mind of the public in general and the teachers in particular in contemporary society. It was generally agreed that the issue of access to education has to be treated as a basic right of every individual. It is closely inter-linked with the right to information and right to work now being articulated in Indian Constitutional Jurisprudence. The Review Committee will be well advised to emphasise the access issue as a basic content of the new education policy.

Among the major goals of the new policy, one should emphasise productive employment as one of the primary objects, even if human beings are not to be treated as mere assets. For the development of individuals as well as society, education has to be linked with employment. This concern has to be reflected in the scheme and content of education. Secondly, value orientation in education is a constitutional imperative which has to be addressed with specific proposals at every level of the educational system. Thirdly, excellence has to be a primary goal and it needs continuing emphasis. Excellence shall not be put in opposition to equality as such a perception is perverse and unwarranted.

On the question of content and method of education a lot of experience is imperative. Curriculum planning and development is a continuing process which must attempt to synthesis the need for knowledge, skills and attitudinal development. Vocationalisation is a desirable goal and this may be suitably adapted at every stage including university education. The concept of common school system is worthy of adoption. So also the proposal to seek accountability of higher education through linkages with removal of disparities and rural development. It is necessary to shift the emphasis in education from the teacher to the learner which would have several implications in the method and medium of instruction. There is no escape from the bilingual approach in tackling the issue of medium of instruction.

On the question of management, the role of voluntary agencies, of parents and of the community has to be increasingly examined and integrated. This would require not only a decentralized approach to educational management but also the development of structures at the regional level which are autonomous and provisional. There is absolute need for minimising bureaucratic involvement in educational administration and increasingly the role of teachers in every aspect of education.

Rural Varsity De-addicts Villagers

The T.T.K.Foundation, Madras, under the direction of Mrs.Santhi Renganathan, a veteran Social Worker, conducted a de-addiction camp at Gandhigram Rural University from June 10-24, 1990 for 25 alcoholics. These alcoholics were picked up from five villages in the vicinity of Gandhigram. The Department of Home Science played a leading role with the Department of Extension, rendering necessary field assistance. In addition, various Departments and Centres of the Gandhigram Rural Institute extended active support in identifying the alcoholics based in their respective service villages.

The alcoholics, selected for the de-addiction camp belonged to diverse occupational groups such as illicit alcohol brewers/sellers, small farmers, landless labourers, dhobi, petty shop-keeper, tannery workers and dyeing workers. A small segment of persons were in regular Government service attached to the Education and Police Departments.

All of them were chronic alcoholics in the rock bottom stage, each one drinking 4 to 6 litres of alcohol a day. They were in the age range of 18-50 Years with a history of 8-20 Years of uninterrupted drinking. All of them were using the country liquor without any exception. The average expenditure on alcohol by every individual was reported to be between Rs. 200 and 600 per month.

The de-addiction camp, started with 'detoxification' process was followed by 'psychological therapy' which helped them to identify the factors contributing to alcoholism as also to develop support system from the family and community. Above all,it enabled them to build up the personality of every alcoholic, centred around each one's strong points. Later, the counselling exercises facilitated them to release their pent up feelings and get relieved of anger, depression, self-denial, impatience , fatalism, etc.

It may be noted that, in addition to the addicts, their wives and children and their well-wishers (labelled as 'support person' for this purpose) were also involved in this camp for counselling exercises. The extension workers enabled strengthening the support system in order to deal with this sensitive task of de- addiction. Thus 'systems approach' was followed in injecting the message of the ill-effects of drinking.

De-addiction process did not end with the completion of the camp. It was only a solid base for a successful beginning. A strong follow-up was necessary to secure a stout support for stopping the drinking habit in a sustainable manner. To shoulder this stupendous task, 12 postgraduate students specialising in Home Science Extension, were deployed throughout the programme. They instilled confident to assist in rotting out this inimical habit from among the addicts. Accordingly, they volunteered to adopt upto three persons each for follow-up work. They would also be documenting their experience in the form of case studies, which could be submitted to the university as part of their extension report.

Every Saturday, the students visit their clients in their respective villages and make enquiries of their health problems and difficulties. Further the meeting is held on 15th of every month. In addition, the Counsellor from TTK Foundation visits Gandhigram in the last week of every month for follow-up counselling and gives necessary guidance and support including the required medicines. Contact with TTK Hospital is strengthened through letter correspondence by the students as well as the treated alcoholics. Doctors from Kasturba Hospital render necessary guidance and help at times of emergency and crisis.

Besides the de-addiction efforts, the camp enabled detection of cases of cancer, T.B. and leprosy (one each). The students who were involved in the programme took pains to facilitate proper treatment of these persons at Government hospitals. The significant part of the programme was the involvement of the students in planning income generating programme for the economic betterment of the addicts' families.

The joint venture of Gandhigram Rural Institute with TTK Foundation, Madras has in effect proved to be a "REPLICABLE MODEL" for strengthening the university extension programme. Each student exposed to the whole process is a hope for tomorrow and will stretch her hands near and far to put an end to this pernicious practice.

National Book Development Council

The Government of India have decided to revive the National Book Development Council. It will be recalled that the Ministry of Human Resource Development, Department of Education, Government of India, had set up a National Book Development Board in 1967 to lay down guidelines for the development of the book industry in the context of the overall requirements of the country. The Board was subsequently reconstituted in 1970 and functioned until February 1974. A new body called the National Book Development Council was set up on 15th September, 1983 and functioned till 30th September, 1986.

Composition of the Council

The revived Council will be headed by the Minister of State in charge of Education, Ministry of Human Resource Development. Chairman, National Book Trust will be the Vice Chairman of the Council.

It will have the following as ex-officio members:

i) Education Secretary
ii) Secretary, Department of Industrial Development (or his nominee - not below the level of Joint Secretary).
iii) Commerce Secretary (or his nominee - not below the level of Joint Secretary)
iv) Secretary, U.G.C.
v) President, Sahitya Akademi
vi) Additional Secretary, Department of Education
vii) Director, N.C.E.R.T.

Five Members will represent Publishers' Associations:

i) President, Federation of Publishers and Booksellers, Associations in India.
ii) President, Federation of Indian Publishers.
iii) President, Federation of Educational Publishers.
iv) Chairman, Book Panel, CAPEXIL.
v) President, Akhil Bhartiya Hindi Prakashak Sangh.

There will be six Publishers'representatives on the Council:

i) Ms. Ritu Menon, Kali for Women, A-36 Gulmohar Park, New Delhi - 110049 (An innovative women's publisher)

ii) Shri Tajeswar Singh, Managing Director, Sage Publications India Pvt. Ltd. (English)

iii) Shri Samuel Israel, 9, Bandstand Apartments, 212, Byramni Tejabhai Road, Bandra, Bombay.

iv) Shri P.P.C. Joshi, General Manager, People's Publishing House.

v) Two more publishers to be nominated later.

Three Members will represent Voluntary Agencies. Three

i) Shri Krishna Kumar, Kerala Shastra Sahitya Parishad, Vanchyoor, Trivandrum.

ii) Shri Jitendra Desai, General Manager, Navjivan Trust, P.O. Navjivan, Ahmedabad.

iii) One more representative of a voluntary agency, to be nominated later.

Five members will represent Authors' on the Council:

i) Secretary General, Authors Guild of India.

ii) Secretary General, National Federation of Progressive Writers.

iii) Shri K.S. Duggal, P-7, Hauz Khas, New Delhi-16. (Punjabi)

iv) Shri Ali Sardar Jafri, 10 Seeta Mahal, Bomanji Pelit Road, Bombay-36 (Urdu)

v) One more author to be nominated later

Libraries interests will be represented by

i) The President, Indian Libraries' Association.

ii) Director, National Library, Calcutta.

Joint Secretary (Book Promotion), Department of Education will be the Member-Secretary of the Council.

Functions of the Council

The functions of the National Book Development Council will be:-

(i) To review the progress of book publishing in the country and to advise the Government regarding: (a) measures for the development of the book industry and trade, including the export of books; (b) measures to promote the availability, in particular, of special-purpose books of good quality required for implementation of the policy on education including children's books required under operation Blackboard and for Non-Formal Education Centres, books for the National Literacy Mission, and books for the secondary and University levels etc.; (c) Measures for improving the quality of book production and dissemination of the relevant skills.

(ii) To advise the Government regarding measures to safeguard the interests of authors, with a view to encouraging authorship, particularly in Indian languages.

(iii) To advise the (Central) Government on such matters or to perform such other functions as are referred to it by the Government.

Tenure of Members

The term of the National Book Development Council shall be three years. The tenure of the Chairman and each member of the Council, other than ex-officio members, shall normally be three years. In case of ex-officio members, the membership of the Council shall terminate when they cease to hold that office or appointment.

The Council shall meet at least once a year. It may set up Committees/Panels for specific purposes which may meet as frequently as required.

The Headquarters of the Council shall be at New Delhi and its Secretariat will be provided by the Book Promotion & Copyright Division in the Department of Education, Ministry of Human Resource Development.

NEWS FROM UGC

Countrywide Classroom Programme

Between 8th December to 15th December, 1990 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m.to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

1.00 p.m. to 2.00 p.m.

8.12.90

"Consumer Protection-V: Right to Redressal"

"Rabindra Sangeet-IV"

"A Discussion With A.K. Ramanujan"

9.12.90

No Telecast

10.12.90

"Classical Mechanics -11 : Angular Momentum Conservation"

"Industrial Conflicts in India"

"The Two Roads"

11.12.90

"The Redox Indicators"

"Education For Employability"

"Anesthesia"

12.12.90

"Environmental Protection in Atomic Power"

"Map Consciousness"

"Naming the Plants-II"

13.12.90

"Programming in PASCAL Language-Session-II"

"What is a Rock?"

"Graham Greene :A Portrait By Khushwant Singh"

14.12.90

"Cosmic Sparklers"

"Meditation and the Youth"

"City Sewage Treatment"

15.12.90

"Consumer Education & Research Centre"

"The Man Who Ventured-Sir Edmund Hilary"

"Folklore Indian Context"

IInd Transmission

4.00 p.m. to 5.00 p.m.

8.12.90

"Rasa Ranjita : Understanding Indian Dance -4 : Bharatnatyam -II"

"Middle Indian Cinema : A Ticket to the Future "

"Fun With Fins"

9.12.90

No Telecast

10.12.90

"Classical Mechanics-5: Pseudo Forces"

"Land Management"

"Earthworm Anatomy"

11.12.90

"Equilibrium"

"Learning-Its Nture and Characteristics :The Nature of Learning"

12.12.90

"Field Channels"

"Old Temples of Dwarhat"

Mitosis & Meosis"

13.12.90

"COBOL-5 : A Review"

"Mesolithic Society"

"The Languages of Science."

14.12.90

"The Energy of Lunar Turbine"

"Photo Journalism"

"Global Warming"

15.12.90

"Rasa Ranjita - Understanding Indian Dance - 6 : Mohini Attam"

"Jawahar Lal Nehru : The Architect of Modern India"

Career Advancement Scheme for Lecturers

The University Grants Commission (UGC) has approved guidelines on counting of previous service for purpose of senior scale/selection grade under the career advancement scheme for the lecturers.

Under the scheme previous service without any break as a lecturer or equivalent in a university, college, national laboratory or other scientific organizations like the Council of Scientific and Industrial Research (CSIR), the Indian Council of Agricultural Research (ICAR), the Defence Research and Development Organisation (DRDO), and as a UGC Research Scientist will be counted for his/her placement in the senior scale /selection grade provided that:

- the post was in an equivalent grade/scale of pay as the post of a lecturer;
- the qualifications for the previous post were not lower than the qualifications prescribed by the UGC for the post of a lecturer;
- the lecturer concerned possessed the minimum qualifications prescribed by the UGC for appointment as a lecturer;
- the post was filled in accordance with the prescribed selection procedure as laid down by the university/State Government;
- the appointment was not adhoc or on a leave vacancy of less than one year duration.

The guidelines further stipulate that no distinction should be made with reference to the nature of management of the institution where previous service was rendered (private/local body/Government) if the above criteria are satisfied.

Central Aid for Amravati Varsity

The University Grants Commission has declared the Amravati University, Amravati (Maharashtra) fit to receive central assistance for all purposes including institutional development in terms of the rules framed under Section 12(B) of the UGC Act, 1956.

Established in 1983, the Amravati University has at present 116 affiliated colleges, and six postgraduate departments of its own. In addition, nine more teaching departments are being developed by the university. The university has also given priority to students' participation in extension programmes like National Service Scheme (NSS), National Cadet Corps (NCC), Non- Formal Education, Sports and Cultural activities.

NEWS FROM AIU

Calicut Hosts South Zone Youth Festival

A Festival Rally by about 400 young artists and official delegates from 18 universities heralded South Zone Inter University Youth Festival at Calicut on 10th November, 1990. It was a splash of colours as teams of different universities, dressed in their traditional best, wound their way through the 4 km. long route cheered by the people who had lined up on both sides of the streets. Despite the closure of a number of universities in Andhra Pradesh and Karnataka, 18 universities participated in the Festival at the Calicut University from November 10 to 14, 1990.

The Youth Festival was formally inaugurated with lighting of the traditional lamp by Dr. T.K. Ravindran, Vice-Chancellor, Calicut University. A choral music presentation by the host university Choir, welcomed the participants.

The competition began with the group dances in which ten teams participated The Andhra Agricultural University performed the harvest dance of Punjab, the Bhangra. The tribal dance of Andhra Pradesh that narrated the story of a person who was attacked by a tiger and how the villagers received him by offering prayers to the deity was presented by the Andhra University. The scene of the tiger-hunt was portrayed in a vivid and picturesque manner. The Bharathidasan University presented Kavadiyattam and poykkal kuthu. The participants displayed superb body co-ordination and balance. Chekkabhajana, a traditional dance of Andhra Pradesh was presented by the Telugu University that lays great emphasis on raga, thala and laya. The audience were enthralled by the Karagattam performed by the Madurai Kamaraj University team. The dance is a rare combination of balance and graceful movements. Valiant wars fought in the past, with reference to Mamanagam and Nagapattu were highlighted by the dancers of Kerala Agricultural University. Dressed in white costumes decorated with red gilt, the dancers depicted the scenic beauty and rich cultural heritage of Kerala. Another harvest dance portraying all the aspects of a successful harvest was presented by Sree Padmavathi Mahila Viswavidyalaya. The Bharathiar University presented a short dance portraying an offering to Lord Vigneswara. A spectacular performance of pongal was presented by the Annamalai University. The dancers dance with the Karagam and firepots and make pongal which they offer to please the deity.

The sweeps, the glides and the coiled movements of the ragas was a real feast for sensitive ears. Of the eleven participants, nine opted for Thyagaraja Keerthans. Jyothi, who represented Mahatma Gandhi University chose a composition by Mysore Vasudevachar in Aaberirg.

Kamala of Bharathiar University offered a superb rendering of Didshitar kriti in rag Kalyani set to mishrachpatal. Pradeep Somasundaram of Andhra University and Shantala Meenakshi of Calicut University rendered the same Thyagaraja Keerthana 'Saala gallalaluga' in Aaberi rag set to aditala. 'Paramapurusha jagadeesara....'the famous Swathithirunal kriti in Vasantha raga was offered by Sudarsan of Bharathidasan University. Representing Annamalai University, Subramaniam, gave a good performance in rag panduvarali set to mishrachapatal. Lekha Nair of Kerala University rendered a keerthana in ragh bhairavi set to aditala.

The variety and splendour of the dance forms Bharatanatytam, kuchipudi and mohiniyattam enthralled the art lovers in the Tagore Theatre. Kuchipudi seemed to be the favourite and had the maximum number of participants. Mohiniyattam, the temple dance form of Kerala, with its graceful movements, sober and attractive costumes, was presented by Neena Prasad of Kerala University and Lathika C.V. of Calicut University.

Four participants presented Bharatanatyam. Asmath Hussein of Alagappa University, presenting 'Dasavathara' in Ragamalika proved that religion is no barrier to art lovers. The participants of Bharathidasan University and Annamalai University, both presented padam with Thillana as end pieces. Kuchipudi, the dance drama of Andhra Pradesh, was presented by Ms. Asha Latha of the Mahatma Gandhi University, who performed 'Srikrishana Tharangam'. Ms. Radhika Devi P. of Sri Padmavathi Mahila Vishwa Vidyalaya performed a Tharangam in Mohana raga set to aditala. Ms. Sadhana of Telugu University, gave a performance in Mohana raga set to aditala.

In the One Act plays, most of the themes presented dealt with social problems like national integration, human fraternity and the caste system. A few of the plays had perennial themes like lust for power and zest for knowledge as their central themes. Telugu University performed an episode of 'Aranya Parva' from Mahabharata, Tamil rendering of a Malayalam play written by the late Prof. G. Shankara Pillai. The theme of the play presented by Annamalai was based on the life and message of Mahatma Gandhi. Alagappa University presented a play entitled 'Wanted-True Nationalism'. Kerala University presented a widely acclaimed play 'Uchatanam' (The purge), based on a story by Prof. G. Shankara Pillai. Calicut University performed 'State News' a play written by Badal Sarkar.

The light music solo programmes started with a ghazal rendered by Prathana of the National Law School of India. The Telugu University was represented by K. Raghunath, a second year degree student in music. G. Mathili rendered a devotional song composed by St. Annamacharya for Sree Padmavathi Mahila Viswa Vidyalaya. Representing Mahatma Gandhi University was Rachana A. of Maharaja's College, Ernakulam. R.L. Chitra represented Bharathidasan University and T.K. Rohini, the Andhra Agricultural University. Baiju A.of Physical Training College, represented Alagappa University. Calicut University had Sreeja A. singing 'Kaveri' nin theerangalil. Pradeep Somasundaram, College of Science and Technology represented the Andhra University in light music (solo), and classical music (solo) .

Hyderabad University was represented by Ramakrishan Reddy while Usha, V. represented the Kerala Agricultural University in light music (solo). Kerala University was represented by Monali Sanyal.

13 teams participated in Group Song (Indian). Andhra presented a patriotic song (in Telugu) followed by a folk song (both composed by Sri Maniola Ramakrishna Rao and set to tune by Sri Veera Badra Rao). Bharathidasan sang on "world peace" and also presented a malayalam song. Mahatma Gandhi's all women team's first song was about the rich cultural heritage of India and communal harmony and the second a harvest song.

In Western Vocal (solo) Marie Alphonso Ligouri (Pondicherry University) and Miss Rashmi Ramakrishnan (National Law School, Bangalore) were selected out of eleven participants which included entries from Sri Padmavathi Mahila, Hyderabad, Bharathidasan, Annamalai, Andhra, Kerala, Calicut, Mahatma Gandhi, Cochin and Kerala Agricultural Universities Marie Alphonso Ligouri, who had earlier performed at the closing ceremony of the festival of India at Moscow (1989) sang a self composed number which won him a standing ovation.

In the Group Song (Western) George & Co. from Mahatma Gandhi University gave an excellent replay of "Five Bridges Road" (originally done by 'Eagles') "with a little help from my friends..." (A beatles number) and "Blue skies" (originally by pink Floyd). Bharathidasan too was selected from amongst 8 entries. Other competitors were Pondicherry, Andhra, National Law School of India, Bangalore, Sri Padmavati Mahila, Annamalai and Bharathiar.

The Skits competition had 13 teams. 'National Integration' was the pet theme for almost all teams. Andhra Pradesh Agricultural University's "No Vacancy" and Calicut's "To keep mum is death" were well received.

Bharathidasan University and Sri Padmavati Mahila University were declared selected from the group.

The Mime event got off to a good start with Bharathidasan University symbolically portraying the communal anarchy and the divide and rule policy of powers that be. Mahatma Gandhi's all women team put up a spectacular show depicting the vulgarity of modernism and the perverted transition from the relatively sincere past to an insincere and insecure present. Bharathidasan university which had been selected in both skit and mime won the rolling trophy in this section.

In On the Spot painting event, the topics given were (i) Hurricane, (ii) Forest Landscape in the evening effect, or (iii) Agitation.

The topics given for the Collage event were (i) Tanks, temples and towers, (ii) Elephants in the forest (iii) Construction. Smitha C. of Calicut University and Venkanna, A. of Andhra University were selected to represent South Zone at the nationals.

The trophy for the Fine Arts events was retained by the University of Calicut.

In Quiz, Kerala University bagged 154 points while the Calicut and Mahatma Gandhi Universities followed with 134 and 131 points respectively. Andhra was the fourth team.

A special evening of guest performance was organized which proved to be the most memorable event of the Festival. A variety of cultural events were staged by the youth and contingent leaders including the local foreign students from Sudan and Palestine.

The valedictory function was presided over by the Minister of Cultural Affairs, Kerala and the popular local cine-star Ms. Sari gave away the Championship Trophy to the winners.

The most coveted overall championship trophy went to the Andhra University while the Runners up position was claimed by the Bharathidasan University.

INTER UNIVERSITY SOUTH ZONE YOUTH FESTIVAL RESULTS

DANCE EVENTS

1. Folk Dance (group) : Andhra University, Bharathidasan University.

2. Classical Dance (solo) : Sadhana S, Telugu University; Neena Prasad, Kerala University.

MUSIC EVENTS

3. Classical Vocal (Solo) : Pradip Somasundaran, Andhra University; Lekha R. Nair, Kerala University.

4. Classical Instrumental Percussion (Solo) : Satishkumar P, Andhra University; Sivasubramanian V, Madurai Kamaraj.

5. Classical Instrumental Non-percussion (Solo) : Parthasarathi S. Madurai Kamaraj; Salat Parvathi, Bharathidasan Univ.

6. Light Vocal Indian (Solo) : Sreeja K.T., Calicut University; Pradip Somasundaran, Andhra University.

7. Western Vocal (Solo) : Marie Alphonsus Liguori, Pondichery; Rashmi Ramakrishnan, National Law School.

8. Group Song (Indian) : Mahatma Gandhi University, Bharathidasan University.

9. Group Song (Western) : Mahatma Gandhi University; Bharathidasan University.

LITERARY EVENTS

10. Quiz : Kerala University, Calicut University.

THEATRE EVENTS

11. One Act Play : Kerala University, Andhra University.

12. Skits : Bharathidasan University, Sri Padmavathi Mahila University.

13. Mime : Mahatma Gandhi, Bharathidasan.

FINE ART EVENTS

14. On the spot painting : Divakaran, R.V.M., Calicut University; Murali D. Bharathiar University.

15. Collage : Smitha C, Calicut University; Venkanna A., Andhra University.

16. Poster Making : Joseph Manoj K, Calicut University; Rajasekhar P.; Andhra University.

17. Clay Modelling : Venkata Rao K., Andhra University; Joseph Manoj K., Calicut University.

18. Cartooning : Venkiteswaran K.C., Calicut Univ. Phelix Devasia, Mahatma Gandhi Univ.

FESTIVAL RALLY

Bharathidasan University

Andhra University.

ROLLING TROPHIES

DANCE EVENTS

Andhra University

MUSIC EVENTS

Mahatma Gandhi University

LITERARY EVENTS

Kerala University

THEATRE EVENTS

Bharathidasan University

FINE ARTS EVENTS

Calicut University

RUNNERS-UP TROPHY

Awarded to Bharathidasan University.

OVERALL TROPHY

Awarded to Andhra University.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the Years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

RESEARCH IN PROGRESS

A List of Research Scholars registered for Doctoral Degrees of Indian Universities.

SOCIAL SCIENCES

Psychology

1. Balachandran, M. **Problems of industrial growth and development in Kerala : A psychological investigation.** Kerala. Dr Immanuel Thomas, Lecturer,Department of Psychology , University of Kerala, Kariavattom.

2. Masroor Jahan. **Therapeutic evaluation.** BHU. Prof R R Tripathi, Head, Department of Psychology, Banaras Hindu University, Varanasi.

3. Pathak, Abhilasha. **Assessment and promotion of physical activity among undergraduate females with the help of behavior modification technique.** BHU. Dr (Mrs) S S Kaushik , Dapartment of Psychology, Banaras Hindu University, Varanasi.

Sociology

1. Jayalekshmi, P. **Disability characteristics in Cancer.** Kerala. Dr K B Thankamani, Lecturer, S N College, Chempazhanthyand Dr M Krishnan Nair, Director, Regional Cancer Centre, Trivandrum.

2. Kathpal, Bindu. **The invisible home -based work: A sociological study of women hosiery workers in Ludhiana.** Panjab. Prof (Mrs) K P Singh, Department of Sociology, Panjab University, Chandigarh.

3. Pothen, Sosamma. **A sociological study of women political leaders in contemporary India.** D. Litt. Devi Ahilya.

Political Science

1. Daulani, Sangita. **Third World and international politics.** BHU. Dr A S Upadhyay, Department of Political Science, Banaras Hindu University, Varanasi.

2. Menon, K. Muraleedhara. **Tourism management and administrative problems in Kerala.** Kerala. Dr G Gopakumar, Lecturer,Department of Politics, University of Kerala, Kariavattom.

3. Mishra, Kamlesh. **Swatantrayottara Bharatiya rajniti mein sampradayikata.** BHU. Dr T N Pant, Reader,Department of Political Science, Banaras Hindu University, Varanasi.

4. Moulick, Reba. **Bhartiya punarjagaran aur Swami Vivekanand.** BHU. Prof H N Tripathi, Department of Political Science, Banaras Hindu University, Varanasi.

5. Pandey, Shashi Kant. **Ideology, programme and working of B J P, 1979 to 1990.** BHU. Dr R R Jha, Reader,Department of Political Science, Banaras Hindu University, Varanasi.

6. Pandey, Sushma. **The predominance of spiritual in Indian political thought: A study of Vinoba Bhave.** BHU. Dr C K Padia, Department of Political Science, Banaras Hindu University, Varanasi.

7. Pathak, Anand Swaroop. **A political study of the peasants movement in Western U.P.1969-1990.** BHU. Prof H N Tripathi,

Department of Political Science, Banaras Hindu University, Varanasi.

8. Pathak, Pankaj. **Bharatiya rajniti mein kendra mein Bharatiya Janata Parety kee vipaksh mein bhumika, 1980-90.** BHU. Dr T N Pant, Reader, Department of Political Science, Banaras Hindu University, Varanasi.

9. Poonam. **Inter-state relations in India: A study in cooperation.** BHU. Dr R R Jha, Reader, Department of Political Science, Banaras Hindu University, Varanasi.

10. Rai, Krishna Mohan. **Bharatiya videsh niti: Shanti evam suraksha ke sandarbha mein.** BHU. Dr A S Mishra, Department of Political Science, Banaras Hindu University, Varanasi.

11. Rajendra Bharati. **Administrative reforms in India with reference to the All India Service.** BHU. Dr D D Nanda, Department of Political Science, Banaras Hindu University, Varanasi.

12. Sharma, Dinesh. **Indian policy and national building and non- Congressism.** BHU. Prof H N Tripathi, Department of Political Science, Banaras Hindu University, Varanasi.

13. Singh, Hari Nam. **Dr. Sampurnanand ke rajnitik vichar.** BHU. Dr R P Pathak, Department of Political Science, Banaras Hindu University, Varanasi.

14. Singh, Indu Kiran. **Bharat -Sri Lanka sambandha: Tamil samasya ke vishesh sandarbha mein.** BHU. Dr A S Mishra, Department of Political Science, Banaras Hindu University, Varanasi.

15. Singh, Ram Janam. **Bharat aur Nepal: Dakshin Asiayee sahyog ke sandarbha mein: Ed adhyayan.** BHU. Dr A S Mishra, Department of Political Science, Banaras Hindu University, Varanasi.

16. Singh, Shaivalini. **The role of ideology in international politics: A case study of Germany.** BHU. Prof N Pant, Reader, Department of Political Science, Banaras Hindu University, Varanasi.

17. Srivastava, Madhumita. **Ethnic dimensions of international security.** BHU. Dr A S Upadhyaya, Reader, Department of Political Science, Banaras Hindu University, Varanasi.

18. Tiwari, Kailash Nath. **Dharma nirpekshta aur Shri Ram Janma Bhumi Babri Masjid vivad.** BHU. Prof H N Tripathi, Department of Political Science, Banaras Hindu University, Varanasi.

19. Vijay Kumar. **Autonomy of the electronic media in India.** BHU. Dr D D Nanda, Department of Political Science, Banaras Hindu University, Varanasi.

Economics

1. Joshi, Abha. **Banking and rural development: A regional study of South-West Madhya Pradesh.** Devi Ahilya. Dr V D Nagar, Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

2. Saraogi, Rajkumar. **Factors in the economic growth of Eastern UP.** BHU. Prof D K Misra, Department of Economics, Banaras Hindu University, Varanasi.

3. Sitaula, Dilli Prakash. **Export supply functions: An empirical study.** BHU. Dr P K Chaube, Reader, Department of Economics, Banaras Hindu University, Varanasi.

Law

1. Chaturvedi, Kameshwar Nath. **Doctrine of pleasure with reference to civil servants under the Indian Constitution.** BHU. Shri V S Chauhan, Reader, Department of Law, Banaras Hindu University, Varanasi.

2. Sharma, Prabhakar. **Settlement of claims against railways with special reference to the Railway Claims Tribunal Act, 1987.** BHU. Shri V S Chauhan, Reader, Department of Law, Banaras Hindu University, Varanasi.

Public Administration

1. Sharda, Sarita. **Financial administration of urban local bodies in Himachal Pradesh.** HP. Dr Shiv Raj Singh, Department of Public Administration, Himachal Pradesh University, Shimla.

2. Sharma, Gopal Dutt. **Implementation of poverty alleviation programmes in Himachal Pradesh: A study of Shimla District.** HP.Dr P N Gautam, Department of Public Administration, Himachal Pradesh University, Shimla.

Education

1. James, Jose. **Physical fitness norms for high school boys of the Kerala State.** Kerala. Dr J Samuel Johnson, S N Training College, Nedunganda.

2. Prasad, Radhe Shyam. **A study of application of statistical methods in education.** BHU. Dr P N Singh Yadav, Department of Education, Banaras Hindu University, Varanasi.

Commerce

1. Monikantan, R. **Co-operative credit and agricultural development of Tamil Nadu: A comparative study of co-operative credit and agricultural development of Kanyakumari Distt and Tanjore Distt.** Kerala. Dr T Edwin, TC 13/339, Kunnukuzhy, Trivandrum.

2. Soni, Rameshwar. **Madhya Pradesh ke Vishwavidyalayon ke vittiya prabhandh evam budgetary niyantaran.** Vikram. Dr R S Patel, Prof and Head, Department of Commerce, Madhav College, Ujjain.

Home Science

1. Agrawal, Mamta. **Study of diabetic practices, diatary education and its compliance rate in diabetics with reference to therapy diabetic.** BHU. Dr Purnima Srivastava, Department of Home Science, Banaras Hindu University, Varanasi.

Management

1. Sitadevi, P D. **The practice of human resource management in the Department of Collegiate Education in Kerala.** Kerala. Dr John Pulparampil, Assoc Prof,IMG, Vikas Bhavan, Trivandrum.

HUMANITIES

Philosophy

1. Singh, Sandip Kumar. **Sankhya evam Shaiva sidhanta darshana mein srishti : Ek tulnatmak vivechan.** BHU. Dr K P Mishra, Department of Philosophy, Banaras Hindu University, Varanasi.

2. Mishra, Anjana. **Advaita vedanta evam Kashmir Shaiva darshan mein agyan ka swarup.** BHU. Dr S Vijay Kumar, Department of Philosophy, Banaras Hindu University, Varanasi.

Language & Literature

English

1. Rodriques, Maryan V. **Evaluation of the Shivaji University MBA student's competence in business English and communication.** Shivaji. Dr D K Patil, Principal, Night College of Arts and Commerce, Ichalkaranji.

Sanskrit

1. Archana Kumari.**Balmiki Ramayan ke yuddhakanda ka sahityik tatha rajnitik adhyayan.** BHU. Dr J S L Tripathi, Department of Sanskrit, Banaras Hindu University, Varanasi.

2. Arora, Pratibha. **Amar Chand Suri krit Balbharat ka sameekshatmak adhyayan.** BHU. Dr P D Singh, Lecturer, Department of Sanskrit, Banaras Hindu University, Varanasi.

3. Chaturvedi, Vyasmuni. **Sanskrit mein shikshagranthon kee parampara.** HS Gour. Dr Achutyanand Dash.

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Hindi

1. Damodaran, M.P. **Short stories of Mahip Singh.** Kerala. Dr H Parameswaran, Prof, University College, University of Kerala, Trivandrum.

2. Mallika, S. **Naye Kaviyon mein aham kee bhavana.** Kerala. Dr V V Viswam, Govt College for Women, Trivandrum.

3. Mishra, Uma. **Chhayavadi kavya mein hasya aur vyangya.** BHU. Dr Asha Pant, Lecturer, Department of Hindi, Banaras Hindu University, Varanasi.

4. Rema, R.S. **Re-evaluation of the stories of Yashpal.** Kerala. Dr N I Narayanan, Prof(Retd), Jaya Vihar, Quilon.

5. Resmi, S S. **A comparative study of Pt. Ramachandra Shukla's and Joseph Mundassery's principles of criticism.** Kerala. Dr R S Ramachandran Nair, University College, University of Kerala, Trivandrum.

6. Sheela, V K. **Treatment of nature in the poetry of Sumitranandan Pant and Wordsworth: A comparativie study.** Kerala. Dr R S Ramachandran Nair, University College, University of Kerala,Trivandrum.

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10. Tiwari, Poonam. **Hindi sant kavya mein rupak yojana.** BHU. Dr S S Shukla, Reader, Department of Hindi, Banaras Hindu University, Varanasi and Dr V N Tripathi, Department of Hindi, Banaras Hindu University, Varanasi.

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12. Vijayalekshmi, K.S. **Research on the works of Ananda Sankar Madhavan.** Kerala. Dr N Chandrasekharan Nair, Sreeniketan, Lakshmi Nagar, Pattom P O Trivandrum.

Malayalam

1. Balanandan, B **Adhyatma Ramayana and Kannassa Ramayanam: Comparative study.** Kerala. Dr Vijayalayam Jayakumar, Director, S N Research Cetre, Trivandrum.

2. Girijakumari, N.J. **Bhashachambukalile Gadyam: Oru vimarshatmaka padanam.** Kerala. Dr T G Ramachandran Pillai, Padmalayam, TC 22/906, Attukal, Manacaud P O Trivandrum.

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Kannada

1. Gorawar, Basavanneppa Somappa. **Veerashaiva Desagatigalu: A study in Kannada.** BHU. Prof V Shivanand, Department of Indian Languages (Kannada), Banaras Hindu University, Varanasi.

Geography

1. Jha, Anita. **Scheduled casts and scheduled tribe problem: B.S. City.** BHU. Dr R Y Singh, Reader, Department of Geography, Banaras Hindu University, Varanasi.

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History

1. Rai, Radhey Shyam. **Puranon mein varnit dev pratimayon ka ek adhyayan.** BHU. Dr Ramji Pandey, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

2. Singh, Anandeshwar Prasad Narain. **India as known from Hisuan- Tsang and biographers.** BHU. Prof (Mrs) K K Gopal, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities.

SOCIAL SCIENCES

Psychology

1. Havalappanavar, Nagappa Basappa. **A study of work values of socio-culturally differing professional and non-professional college students in relation to psychological factors: Personal needs, vocational interests and academic achievements.** Karnatak. Dr A S Dharanendriah, Prof and Chairman, Department of Studies in Psychology, Karnatak University, Dharwad.

2. Machado, Tanya. **A multidimensional study of psychosomatic disorders.** Bangalore. Dr (Mrs) Vinoda N Murthy, Prof, Department of Psychology, Bangalore University, Bangalore.

3. Pandey,Kamla. **A psycho social study of the attitudes of acceptors and non-acceptors towards family planning programme.** Gurukula. Prof O P Misra, Department of Psychology, Gurukula Kangri Vishwavidyalaya, Hardwar.

Sociology

1.Patil, Godvari Devendrappa. **Hindu widows: A study of deprivation.** Karnatak. Dr Anil G Mudbidri, Reader, Department of Sociology, Karnatak University, Dharwad.

2. Saifun Nessa. **The Assamese Muslim social structure: Study in a Goalpara Village.** NEHU. Prof. A C Sinha, Department of Sociology, North Eastern Hill University, Shillong.

3. Singh, Mithilesh Kumar. **The socio-economic status and pattern of illness of psychiatric patients attending Government and private hospitals in Bihar: A sociological study.** Magadh.

4. Vats, Balbir Kumar. **Socio-economic correlates of Kandi Water Shed and Area Development Project.** Punjabi. Dr P S Jammu, Prof, Department of Sociology, Punjabi University, Patiala.

Social Anthopology

1. Biswas, Sudhir Kumar. **A study in development anthropology in ecological and cultural perspective in Garhwal.** Calcutta.

2. Ranganathan, K. **Social dimensions of dairy development: A study of selected villages in Karnataka.** Karnataka. Prof D V Raghava Rao, Prof, Department of Anthropology and Director, Tribal Research Centre, Udhagamandaim.

Political Science

1. Beg, Ismail Ali. **Gut nirpekshya andolan kee alochnatmak vivechna Shastri kal ka strokal, 1979-83.** Devi Ahilya.

2. Gopinathan Pillai K. **Political philosophy of Rammanohar Lohia.** Kerala. Dr K Raman Pillai, Prof and Head (Retd), Department of Politics, University of Kerala, Kariavattom.

3. Guru, Shyama Prasad. **Political socialization of urban political elites: A study of the poltical elites of Bolangir Town in Orissa.** Sambalpur. Dr A P Padhi, Prof, P G Department of Political Science, Sambalpur University, Sambalpur

4. Joshi, P C . **Gulf Cooperation Council: Genesis, evolution and prospects.** JNU. Dr Girijesh Pant, Centre for West Asian and African Studies, Jawaharlal Nehru University, New Delhi.

5. Ramesh Kumar. **The Congress Party in the 1970s and 1980s with particular reference to its organization and programme.** Delhi.

6. Sharma, Gurumayum Ibochouba. **Legislative control over public expenditure: A case study of Manipur State, 1972-79.** Manipur. Prof C P Sinha, Department of Political Science, Manipur University, Imphal.

7. Singha, Ranjit. **Urban linkage politics: A study in the state municipal relations in Assam.** Dibrugarh. Dr M N Das, Reader, Department of Political Science, Dibrugarh University, Dibrugarh.

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Economics

1. Acharya, R P. **A study of development finance in India with special reference to Industrial Finance Corporation of India.** Rajasthan. Dr S C Gupta, B 113, Kedtri Nagar, Tonk Road, Jaipur.

2. Bhavani Shankar Rao, Manda. **Area planning for intergrated rural development: A case study of Gopalapuram Block.** Andhra.

3. Chatterjee, Biswadeb. **Tax structure of West Bengal.** Visva Bharati.

4. Madhusudhana Rao, V. **Supply response of pulses in A P during 1967-68 to 1984-85.** Osmania.

5. Momin, Mohammad Abdul. **Rural poverty and agrarian structure in Bangladesh.** Baroda.

6. Paliwal, Arun Kumar. **Factors related to accidents among industrial workers.** IIT Delhi. Prof (Mrs) Purnima Mathur, Department of Humanities and Social Sciences, Indian Institute of Technology, New Delhi.

7. Raghbir Singh. **Role of institutional finance in rural poverty alleviation programme in Haryana.** HAU.

8. Sarma, Harekrishna Deva. **The prospects and problems of inland navigation in Assam.** Gauhati. Dr P C Goswami, IFCI Prof, Gauhati University, Guwahati.

9. Vaish, Chitra. **Agricultural production in India : An analysis of inter state growth rates of major crops, 1949-50 - 1983-84.** Magadh.

10. Venkata Sreedhar, S. **Industrial development in India with special reference to Andhra Pradesh, 1979-80 to 1984-85.** Venkateswara. Prof G Raghava Reddy, Department of Economics , Sri Venkateswara University Post Graduate Centre, Kavali.

Public Administration

1. Ifeanyi, Mbieli Patrick. **Public policy formulation and implementation in India and Nigeria: Comparative analysis.** Punjabi. Dr Pradeep Sahni, Lecturer, Department of Public Administration, Punjabi University, Patiala.

Military Studies

1. Tarachand. **Sino-Vietnam war of 1979: A case study of balance of powers in South East Asia.** Devi Ahilya.

Education

1. Ahari Alaeddin, Etemad. **Role of Islamic Government in the development of higher education in Iran as perceived by university administrators, teachers and students.** Panjab.

2. Baby Sarojini, Nethala. **A comparative study of the traditional method of teaching practice and technique of progressive mastery of skills of teaching English language in their impact on the efficiency of teaching of English by the B.Ed.students.** Andhra.

3. Behera, Suresh Chandra. **An investigation into the impact of education television programmes on the competency of teachers of the elementary schools.** Utkal.

4. Datta, Kusum Lata. **Differences in scientific creativity among high school students.** Jammu. Dr S P Suri, Reader, Department of Education, University of Jammu and Dr Lokesh Varma, Department of Education, University of Jammu, Jammu.

5. Gill, Satindra. **Systems analysis approach to the study of secondary schools in Union Territory of Chandigarh.** Panjab.

6. Gupta, Sushma. **Education as a factor of social adjustment of adolescent girls across different levels of socio-economic status.** Panjab.

7. Mishra, Banabihari. **Personality patterns, occupational and educational aspirations and academic achievement of Scheduled**

Caste and Scheduled Tribe students in Ashram schools of Orissa. Kurukshetra.

8.Pennamma, V V. **Pattern of occupational choices of secondary school pupils and school leavers.** Kerala. Dr (Mrs) Vasantha Ramkumar, Prof and Head, Department of Education, University of Kerala, Trivandrum.

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11. Sarala, S. **Conceptual errors of secondary school pupils in learning select areas in modern Mathematics.** Kerala. Dr K M Lalithamma, Prof, Department of Education, University of Kerala, Trivandrum.

12. Sarojamma, Y.H. **A comparative study of reading ability and social maturity of over normal and under achievers of VII standard.** Bangalore. Dr D S Shivananda, 1220, 1st Main, Vijayanagar, Bangalore.

13. Sema, Kasemsri. **A study of the cooperative education in the Department of Teacher Education and associated teachers colleges in Thailand with special reference to rural development.** Patel. Dr A V Patel, Reader, M B Patel College of Education, Sardar Patel University, Vallabh Vidyanagar.

14. Sibia, Sukhvinder. **Value patterns of children at Piagetian concrete and formal stages of development.** Panjab.

15. Vasantha, A. **Modern management techniques in school administration: A feasibility-cum-model-setting study with particular reference to schools in Tamil Nadu.** Karnatak.Dr G Shivarudrappa, Prof (Retd), P G Department of Education, Karnatak University, Dharwad.

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17. Venkat Reddy, M.V. **Development of Scheduled Tribes in Andhra Pradesh with special reference to their education.** Osmania.

Commerce

1. Bandyopadhyay, Nimai. **Role of dhakra industry in the economic development of the West Dinajpur District.** Calcutta.

2. Gupta, Mahander Pal. **Human resource development in public enterprises with reference to Indian Oil Corporation.** Delhi.

3. Raha, Shankar Kumar. **Market structure, conduct and performance of tanning industry in Bangladesh.** Panjab.

4. Ramaiah, V. **Organisation and management of production units of Andhra Pradesh Small Scale Industrial Development Corporation.** Kakatiya. Dr G Krishna Murthy, Department of Commerce and Business Management, Kakatiya University, Warangal.

5. Uthayasuriyan, K. **Organisational climate and employee performance.** Pondicherry. Dr D Rajagopalan, Prof and Head, Department of Commerce, Pondicherry University, Pondicherry.

Home Science

1. Beena Kumari. **Training strategy for human resource development of rural women.** HAU.

2. Shrivastava, Nilima. **The dietary pattern of fisherman community of Bhalpura with special reference to pregnant and lactating women.** Barkatullah. Dr M P Dwivedi, Director, ICMR Gandhi Medical College, Bhopal.

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(Contd. from page 1)

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Editor :
SUTINDER SINGH

Higher Education in the Pacific Rim

Philip G. Altbach*

In the past two decades,America has recognized the importance of the Asian nations of the Pacific Rim. The rise of Japan as a major economic power and its role in the American economy and more recently the growth of Taiwan.South Korea and Hong Kong as economic powers have significantly altered the world economy. At the same time, the pacific Rim countries have traditionally been dependent on the West, and especially on the United States, for higher education and research. Even in this area, however, the balance is changing, America still plays a crucial educational role in Asia. American universities, ideas, research and scholars are a powerful, if diminishing, influence. Academic institutions in Japan and the newly industrializing countries of the Pacific Rim are already well developed and are becoming truly "world class" institutions. Without question, trans-Pacific academic relationship are and will remain a powerful force, but the United States will no longer dominate the region as it has in the post-war period.

It is worth examining the expanding academic systems of the Pacific Rim countries and their nexus of relationships with the United States. First and foremost, the United States remains at the center of the world knowledge network-knowledge and knowledge products may be one of the few areas where the U.S. retains a favourable balance of trade. Most of the world's major scientific journals are edited in the United States and American scholarly books are a powerful force. The English language has a stranglehold on scientific communication worldwide and shows no sign of diminishing. American R and D expenditures remain dominant although decreasing as a proportion of the world's total. And the United States is the major host country for foreign students and scholars – more than 350,000out of a worldwide total of about one million foreign students study in the United States.

Just as important, the American academic model is immensely powerful overseas, and particularly in Pacific Asia. American ideas about the nature of the university, the relationship between research and the public good, the idea of mass access to higher education, the role of the private sector in higher education, among many others are very influential. Other countries import American ideas and practices in higher education. The thousands of foreign students who study in the United States, return home not only with expertise in their fields of study, but with ideas about American universities, and they often seek to reform their own institutions in an American direction.

At the same time that Asian academics look to American science and higher education, Americans know very little about either university or society in Asia. The study of Asian languages is very limited in the United States at the same time that many every high school and virtually all university students in the Pacific Rim countries studies English and has access to American cultural products—from films to McDonalds very few American students know anything about Asian civilizations. Among the very small proportion of American students who study overseas and the large proportion of these are "junior year abroad" students who do not earn degrees only five percent study in developing countries (including Asian nations). The vast majority go to Europe. America has a significant knowledge deficit concerning Asia and Asian higher education.

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*Professor and Director, Comparative Education Center, State University of New York at Buffalo. He is co-editor of 'From Dependence to Autonomy:The Development of Asian Universities' and other books.

Higher Education Developments

Not only are academic systems in the Pacific Rim nations expanding rapidly, they are dramatically improving in terms of quality. It is useful to provide a brief overview. The Japanese academic system is hard to characterize. It is very hierarchical with the prestigious national universities at the top—but with a mix of institutions—public and private including a large number of junior colleges at the middle and lower reaches of the system. Japan, with almost two and one half million students in colleges and universities, has one of the world's largest post secondary systems.

Many observers have pointed out that Japanese undergraduate education is neither very rigorous nor imaginative. Following the student unrest of the Sixties, there were a number of efforts to reform the Japanese university, both at the national and institutional levels. These efforts were, for the most part, failures. There are a few success stories, such as the scienceoriented Tsukuba University complex near Tokyo. It is significant that the government had to build an entirely new institution in order to implement ideas of interdisciplinary research and other reforms. Changing the existing universities proved to be an insurmountable obstacle. Despite the lack of significant structural change, the quality and scope of graduate education in Japan has been improving. More money, mainly from governmental sources but with a small but growing input from the private sector, has been put into graduate education and research, especially in the sciences. The quality and scope of research in the national universities especially— top-tier institutions like the University of Tokyo and Kyoto University—has significantly increased. In many fields in basic sciences and to some extent in the social sciences, Japanese research is world-class.

Efforts are made to ensure that major research initiatives reflect the government's broader policy and economic goals. Japanese scholars increasingly publish in the major scientific journals and a significant number of academic journals, including many in English, have been established in Japan. The Japanese have also been very active in developing new computer-based knowledge dissemination systems in order to efficiently obtain information from abroad and also to ensure that Japanese science is recognized internationally.

Both Taiwan and South Korea emerged from Japanese colonial domination after World War Two. And both have experienced significant American influence, in academic life and in other spheres, in recent years. In both countries, the academic system was patterned on Japanese models and has in recent years been "Americanized". For example, Japanese-style academic hierarchies have yielded only slowly to the more participative U.S. departmental system. Building on very high quality secondary school systems and rigid examination system, higher education has expanded rapidly in recent years. In both Korea and Taiwan, there is a combination of public and private higher education, although in Taiwan the public sector dominates the system in terms of quality although a majority of students attend private colleges. In Korea, there are excellent institutions in both the public and private sectors.

Both countries have stressed the creation of elite scientific institutions and linking those institutions to the international scientific system and also to emerging high-tech industries. In Taiwan, the government established a Science-Based Industrial Park at Hsinchu, near Taipei, and linked it with two scientifically-oriented national universities located nearby. The Korean government established the Korean Institute for Advanced Science and Technology (KIAST) as a mainly graduate and research institution. Both efforts have been very successful. The Koreans have established Korean-language scientific journals and have stressed a nationally-oriented scientific community. In contrast, Taiwanese scientific publications are frequently in English and Taiwanese academics tend to be more directly tied into the international scientific network, and particularly to the major American universities. Both Taiwan and Korea have stressed the links between higher education, training for both research and industry and the links between university-based research and emerging high-tech foci of the economy. Perhaps most significantly, the combination of fairly generous resources for the elite sectors of higher education and an increasingly well-trained professoriate (most senior staff have advanced degrees from abroad—especially from the United States) has meant that Taiwan and Korea have built up very recently academic institutions of the highest international standards.

China stands in sharp contrast to the other Pacific Rim nations discussed here. While there are pockets of excellence in the Chinese university system, research has only recently been stressed as a major focus of academe and scientific equipment is, in general, not adequate for advanced research. Problems of misallocation of resources are endemic China, for example, has one of the world's lowest student-faculty ratios and many professors do very little work. Stop-go academic development and major changes in policy and orientation has harmed the system. Economic problems in the past few years have disrupted some impressive progress. And the implications of the Tiananmen Square massacres and the resulting demoralization of both students and academics and the crack-down on the universities are very severe but at this time not fully understood. Without question, China's increasingly open academic relationships with the international scientific community have been significantly damaged both by current Chinese policy and the reactions of universities overseas. The combination of severe economic problems and political repression on the campuses will set Chinese science back. Despite problems, the elite sectors of Chinese higher education made impressive progress since the Cultural Revolution, the entire academic system was closed down and seriously weakened. In terms of advanced research, scientific equipment and an orientation to the international scientific community, China, at least for the coming decade, cannot be compared to the other Pacific Rim nations.

Internationalism

The Pacific Rim universities are increasingly international in focus and orientation. Internationalization, for example, has been one of the major foci of Japanese higher education for almost a decade. Japanese universities are seeking to dramatically increase the numbers of foreign students studying in Japan – drawing mainly from China and Southeast Asia. They have encountered not only the inevitable problem of learning the very difficult Japanese language but also considerable rigidity in the academic system itself which has made meaningful internationalism difficult. Nonetheless, considerable resources have been devoted to internationalizing higher education in Japan and the effort continues. At present, Japan hosts 14,000 foreign students, mostly from Asian countries (only about 2,000 American students were studying in Japan in 1988 – and the large majority were junior-year abroad non-degree students).

A majority of the world's foreign students and scholars come from the Pacific Rim. Most of the migration is from Asia to North America and to some extent to Europe. But there is also a considerable and growing amount of intra-Asian study as well. The Philippines and Australia as well as Japan are major "host" countries for foreign students. For the United States, the impact of students from Pacific Rim nations is immense. Among the top ten countries sending foreign students to the United States, seven are Pacific Rim nations, accounting for 37.7% of foreign students in the U.S. The impact is even greater in selected graduate fields such as engineering and some of the basic sciences, since Asian students tend to cluster in a relatively small number of fields. For countries such as Malaysia, Hong Kong and Taiwan, there are more students studying outside their borders than in the country.

Foreign study is a major economic factor. Foreign students contribute a significant amount of money to the American economy – and by the same token constitute a major economic cost to the sending countries. And it should be kept in mind that more than 60% of the foreign students in the United States are privately financed. Less than a quarter of foreign students in the United States are funded by American sources (including U.S. universities, private sponsors and government programs).

The long term impact of foreign study is significant and often neglected in discussions of international study. Foreign students return home not only with expertise in their subject areas and with credentials that often gives them an advantage over their domestically-educated compeers but with ideas about their host countries. Frequently, returnees try to introduce American-style reforms at home. And they often become loyal to both the intellectual style and the products job the host country.

At the same time, many foreign students do not return home, becoming part of what has been called the "brain drain". With the exception of Japan, all of the Pacific Rim countries have contributed significantly to the brain drain. For example, historically more than half of Korean and Taiwanese students educated in the United States have not returned home, although the situation has changed in recent years. China, which is the largest supplier of foreign students to the United States at present, with 29,000 studying, has become a major contributor to the brain drain, and the current situation in China will increase the number of non-returnees.

The brain drain is not as simple as it seems on the surface and must be carefully examined as it has significant implications for international economic and academic relationships. We have learned from the cases of Taiwan, Korea and India that there is, in the long run, considerable contact between these countries and their "scientific diasporas". For example, Taiwanese scientists settled in the United States, both in universities and in private industry, have been very active in the growth of high-tech industry in Taiwan. They have invested expertise and money in Taiwan and in a number of cases have returned to their homeland after living for years in the United States. They have found the improved academic and economic situation at home attractive – and they have also been lured by Taiwan's significant political liberalization and intellectual openness of the past few years. Indians have been active in the computer software industry in the Silicon Valley and have returned home to form joint ventures or to take advantage of India's low wages and considerable scientific talent. Thus, the brain drain is by no means a permanent factor. There is great deal of international scientific communication and even migration between the centre and peripheries. Asian scientists working in the United States are among the most important factors contributing to the technological flowering of the Pacific Rim.

Opportunities for the United States

The growth, increased quality and strong sense of internationalism among the universities of the Pacific Rim has significant implications for American higher education. The United States is, without any question, at present the strongest academic and scientific influence in the Pacific Rim. Although Japan is moving aggressively to play a more important scientific and educational as well as economic role in the region, the United States will remain the major force. The U.S. is the destination of choice for most of the region's students and scholars. English is the dominant second language in the Pacific Rim and its role is becoming even more important. Even academic systems shaped by the British are moving slowly to more American patterns. Throughout the region, American academic models are and will continue to be tremendously influential.

The following are but a few areas where American universities can actively strengthen their ties to the countries of the Pacific Rim:

Link Relationships:

Establishing link relationships with specific universities in Asia where there are mutual interests--such links can involve exchange of students, faculty and administrators. They can increase the numbers of American students studying in Asia – an important goal for American higher education in the coming period. Departments, schools and centres can be involved as well as the central administration. Indeed, the lower the level of the contacts, the more active and meaningful is the relationship likely to be.

Joint Research Efforts:

While there are many informal research relationship among scholars from the U.S. and Pacific Rim nations, the provision of funding, coordination and recognition of such relationships can make them more widespread and integral to our normal research strategies. Now, with the increasing quality and infrastructures of universities in the Pacific Rim, such research relationships can be mutually beneficial. Further, funding can be provided by Asian institutions as well as American universities.

Overseas Campuses:

Several Japanese universities have recently opened campuses in the United States, mostly to provide an overseas study experience for Japanese students. American universities have for a long time had small branches overseas, exclusively as parts of study abroad or research efforts. Very few of these efforts are located in Asia. Such branch campuses might be expanded both in size and scope, perhaps involving students from the host country as well as Americans. Another model, currently underway in Malaysia, is to provide undergraduate education to local students in American branch campuses located in Malaysia. Students then go to the United States to complete their studies. Such arrangements provide U.S. faculty with overseas experience, build up expertise concerning the host country and are often funded by the host country . Variation on this theme is the provision of instruction in English for foreigners both at universities in the U.S. and at sites overseas. There is an immense demand for English training, and much of it is currently provided by private institutions, sometimes with questionable credentials. Universities might well do a better job and at the same time build up an overseas presence. The English-language "industry" can also be profitable.

Asian Languages and Cultures:

There is a significant need for Americans to learn Asian languages and cultures. American universities need to expand their offerings in these areas. Linkages with Pacific Rim institutions can help significantly in this area. For example, U.S. students may attend language program at the link institution overseas. Visiting professors from the institution can offer courses in the U.S. Such relationships provide a key institutional base overseas.

(contd. on page 8)

Views on the Perspective Paper

Towards an Enlightened and Humane Society

U.C. Vashishtha*
K.C. Sahoo**
Gayatree Mohanty***

A perspective paper on Education entitled "Towards an Enlightened and Humane Society" was released on 6th September, 1990 as a discussion draft by National Policy on Education, 1986 Review Committee with an appeal made by its Chairman Acharya Rammurty to the public for their valuable ideas and thoughts on it. The Indore Discussion Group (IDG) consisting of about fifty people representing Elementary, Secondary and Higher Education, University, College of Education, Voluntary Organizations, Mass-Media, Student Community and Social Workers etc. met thrice in early October and discussed the paper in great detail to articulate its views, the extract of which is given asunder.

Preamble

The increasing concerns for Right to work, Threatened Unity and Integrity of the nation and the Impoverishment of the inner man in India have compelled us to think about Education afresh, for, we find no other way to make society enlightened and humane.

We believe in Free, Compulsory and Qualitative Universal Primary Education, Vocationalization of Secondary Education and Excellence in Higher Education having a social relevance and concern for both Man and Matter. We also believe in that education which liberates.

The perspective paper is divided into three parts namely Prologue, Points of departure : Focussing on Issues, and Some Modalities. The IDG deals with all these parts sequentially adding a preamble at the beginning and Epilogue at the end.

Prologue

Specific issues raised in the prologue part are perceived as quite serious problems by IDG. Our people comprising 50 per cent of the world's illiterate, and large sections of children going without primary education, even after 4 decades of independence is really an unfortunate scene. Additional misfortunes are elitist aberrations, casteism, communalism, parochialism and obscurantism in the field of education.

Education to be a catalytic agent must be planned in a meaningful way and organically linked with live issues and larger environmental context i.e. Economic, Political, Social, Cultural, etc.

Gradual increase of "the Load of the School-bag" and cost of education, loss of life in school campus, uninteresting and out moded curricula are some of the major stumbling blocks on the way of universalization of primary education. Universal retention is no less important than universal entry. Curriculum should be as lively as possible and teaching be replaced by learning. Number of subjects should be minimum.

Many countries in the past have demonstrated that universalization of primary education is an achievable goal and we must give it the top priority. The problem lies in making people realise about its need and importance. However, the stupendous task is not singularly a political responsibility. The whole country must make an earnest effort for it.

Ignorance of our rich heritage and unique treasure of traditional knowledge in diverse areas i.e. Agriculture, Medicine, Ecology, Cottage Industries, Astronomy, etc. on the one hand and blind following of the West in the name of modernity on the other make the country dependent.

Lack of further incentives and encouragement to the initiatives and innovations in the field of education by educationists like Gandhi, Tagore, Aurobindo, Vinoba, Gijubhai and many more in the field is a pitiable state. More serious is the condition of teacher training institutes which hardly think of enriching their theory and practice of teaching.

This paper is an extract of the views made by Indore Discussion Group on the perspective paper "Towards an Enlightened and Humane Society"

* *Reader, School of Education, Devi Ahilya Vishwavidyalya(D.A.V.V.), Indore.*

***Research Fellow, School of Education, D.A.V.V., Indore.*

****Lecturer, Dr. P.M. Institute of Advanced Study in Education, Sambalpur.*

An illiterate adult is not necessarily an uneducated person is quite justified. At least here is a chance to distinguish education from that of illiteracy/numeracy or knowledge of alphabets. No romanticisation of illiteracy, meaningful redesigning of adult education programmes and ensuring school education to all children to stop them becoming illiterate adults are quite commanding steps.

The idea of common school system, checks to the mushrooming growth of substandard colleges having little or no academic/socio-economic value, reduction of regional disparities, decentralization of educational planning and management, community involvement in education, etc. are noteworthy forces for quality education and egalitarian society. The difficulty is in upkeeping the tempo. Instead of common school system IDG would like to have neighbourhood schools in the long run.

Education as an investment is never reflected in plan allocations. The promise of earmarking 6% of the GNP in the 8th plan is a case in point. Again decreasing proportion of allocation to the elementary education is analogous to a pyramid precariously balanced upside down.

IDG feels that education is much more important than defence and any other area where funds are flowing without any check. India ranking 115th in the world in terms of investment in education as percentage of GNP is a paradox.

Apart from these problems as listed in the perspective paper IDG shows its concern for a few more points like gradual deterioration of the relationship between teacher and pupil, teacher and community/parents, teacher and teacher and teacher and head of the school. There is also a gradual increase of campus unrest due to politicisation of education.

Improper and inadequate use of mass media i.e. Television, Radio, Cinema, Computers and other learning materials is a national waste.

Points of Departure : Focussing on Issues

Here in this part of the paper 26 issues have been listed down in which NPE, 1986 needs to be modified. The IDG feels that many of the issues like universalization of primary education, women education, equality of opportunity for all, delinking degrees from jobs etc. are not actually departures from NPE, 1986. Rather they are only shifts of emphasis. IDG divides the list of 26 issues into two parts. In the first part it takes those issues on which it has total agreement and in the second part the issues on which it has something to say.

The following are the issues (as appear in the perspective paper) where IDG has no difference of opinion :

i. Integrated and holistic education.

ii. Human being is more than a mere "asset" or "national resource".

iii. Open-up and non-formalisation of schools in creative ways to reach out to all the children of the country.

v Reorganization of adult education with a clear distinction between adult literacy and adult education.

vii Redesigning of education for women's equality.

ix Removal of regional disparities by allocating additional financial and intellectual resources to backward areas, both educationally and socially.

xii Instead of being a mere ritual socially useful productive work (SUPW)should be the life-breath and spreaded over all stages of education to empower people for work.

Though not new, still emphasis on integration of "head", "heart", and "hand", in-built vocational component in the curriculum, operational linkage between "world of work", and "world of school" and "multiple entry and exit points" is worthwhile.

xiv Regional development and improvement of school education as the responsibility to colleges and universities.

xv Realization of the importance of social science research is first of its kind and may be treated as a landmark in education. If implemented in true spirit it can give a historic turn to the nation.

xvi Diversified curriculum for different socio-cultural milieu with due regard to national core curriculum.

xvii Value education to be an integral part of the entire educational process and school climate is an urgent need. IDG feels that a start can be made from the point of teacher selection. Besides subject competency their morality, character and values should be taken into consideration.

xviii "Local Area Planning" and formation of "Educational Complexes" are indispensable. University personnel should play an academic leadership role in a democratic and voluntary manner.

xix More and more decentralization for smooth educational administration and management.

xx Examining afresh the recruitment, training, status and service conditions of the teachers.

xxi Implementation of grievance redressal machinery for prompt solution of the grievances of pupils, teachers and public concerning education.

xxii Substantial allocation for education both in centre and state budget alongwith exploring of new modalities for raising resources.

xxiii No further initiative for centrally sponsored schemes unless they be for the purpose of securing decentralization of educational management at the grassroot level.

xiv Instead of voluntary organizations responding to patternised government schemes government should respond to the initiatives and self-charted actions of the voluntary organizations.

xxv Education must be people's movement and government is only to play a supportive role.

Following are the issues where IDG has something to say:

iv Early Childhood Care and Education (ECCE) must be made an integral part of planning for primary education. IDG would like to include maternity care with it as well. As far as practicable informality should be maintained throughout the process. Planning should be made with a futuristic outlook.

vi For ensuring an egalitarian social order there should be no segregated nurturing of talents in separate schools. But IDG can no way support the negligence also. The serious brain-drain problem must be kept in view. Talent must be redefined and due recognition should be given to it. Identification of talent must be made from the early part of life and proper nourishment should be given to it. Diversified courses, specially trained teachers, and favorable home and social climate are obvious requirements. IDG doubts about the "excellence" of talents in common schools.

vii IDG differentiates between the common school and neighbourhood schools and prefers the latter. Of course their establishment and functioning should be within the broad supervision of educational complexes and local community.

x Accepting mother tongue as the medium of instruction/expression at the elementary level is justified. As stated in the perspective paper there is ambiguity about the medium of instruction at tertiary level. IDG proposes Hindi to be the medium of instruction at tertiary level since it is the spoken language of majority of the people of our country. However, effort should be made to make people accept Hindi as national language. Looking to the global nature of the universities english should also have a place.

xi For strengthening social cohesion and national integration only interaction of regional languages may not be adequate. There should be dynamic cultural interaction also.

xii Regarding SUPW, IDG has no two opinions. But it perceives the sub-points like (e) introduction of modular courses and credit accumulation, (f) continuous comprehensive internal assessment, and (g) Delinking of degrees from jobs misplaced under the heading of SUPW. Better they should have come under evaluation.

xiii There is no dispute regarding raising the quality of higher and technical education in real terms. But there should be no isolated thinking. Quality must be brought from the grassroot level. The IDG is also for an indigenous technology with a human face.

xvi Making "Right to Education" a fundamental constitutional right is undoubtedly a good proposition. But realization should be made that right presupposes duty and only amending the constitution does not solve the purpose.

In addition to these observations IDG feels like to hold teachers accountable to the overall development of the society in general and all round personality development of the students in particular.

Modalities

This is the last section of perspective paper containing nine presentations i.e. (i) Opening up and non-formalizing the school system, (ii) Common School System, (iii) Empowering People for Work, (iv) Examination Reform, (v) Languages, (vi)Education for women's equality (vii) Removal of Regional Disparities, (viii) Decentralized school management and (ix) Resources. IDG did show less concern about these modalities for they are in line with the problems. However, it appreciates some of the points like-

Reduction of school hours and increasing learning hours;

Adjusting school calender to local needs;

Freedom for first generation learners;

Peer teaching;

Ungraded classrooms;

Community participation in learning process;

Educational complexes;

Effective linkages between "world of school" and "world of work";

Continuous comprehensive examination;

Local area planning;and

Augmenting resources for education.

Epilogue

The great ideas have always overflooded this land in the past. No doubt about its overflowing in the future as well. The present perspective paper contains in many ways the shades of similar great ideas. The challenge is only implementing it. We apprehend this perspective paper not be an additional document awaiting further modification with changing political wave. Our sincere appeal is for an immediate translated practice.

Authors are thankful to Dr. B.K.Passi, Head and Dean, School of Education, D.A.V.V., Indore, Mr. H.K. Senapaty, Lecturer, D.A.V. College, Koraput and IDG Indore for their valuable suggestions.

Higher Education in the Pacific Rim

(Contd. from page 4)

Joint Facilities:

It may be possible for American universities to set up research centers, laboratories or resource and data banks with Pacific Rim institutions. Such efforts can be jointly funded and placed in the most strategic location.

Future Trends

Pacific Rim universities will continue to grow. They will continue to develop as "world class" institutions. Top quality universities exist in Japan and Australia and are emerging in Korea, Taiwan, Hong Kong and other Pacific Rim nations. Academic progress has been slowed, or perhaps even halted in China, but will inevitably resume. The United States has the opportunity to participate in these key developments. The U.S. remains the major scientific center for the Pacific Rim nations. As new data-base technologies expand, it is likely that scientific communication will be further strengthened. At the same time, there is an immense need for Americans to learn more about the culture, politics and economies of the Pacific Rim, and higher education links can be of considerable importance in this respect too.

In some ways, the equation has changed. Pacific Rim institutions are increasingly self confident. They are no longer intellectual colonies of the United States. Relationships must be on the basis of equality with mutual benefits resulting from any linkage or program. Not only can Asian universities offer sophisticated knowledge about Asian societies, but increasingly there is much that Americans can learn from scientific research and applied technology in the universities of the nations of the Pacific Rim. For a variety of reasons, scholars in Asia know considerably more about us than we know about them.

The climate for higher education in the Pacific Rim is likely to remain very positive. Institutions continue to expand and, at least in the elite universities, quality increases as well. Research is an increasingly important part of the role of East Asian higher education. It is likely that there will be few political obstacles in the way of increasing U.S. involvement. And the increased wealth of the Pacific Rim nations means that academic relationships can be on a basis of fiscal equality. Indeed, in the current economic climate in the United States, it is more likely that fiscal difficulties will be on the American than the Asian side.

American universities must understand that they need to take academic developments in the Pacific Rim seriously. There is still an assumption that research from other countries is not worth while–American scientists do not tend to cite the work of foreigners. In many fields, Asian research is of considerable importance. The situation has changed. Asian research is of considerable importance. The situation has changed. Asian universities can buy American academic institutions. Research and scholarship is of a high standard. And Asians know a great deal more about us than we do about them. Higher education in the Pacific Rim has emerged as a world force–American universities must take it seriously.

SHRI SANT GAJANAN MAHARAJ
COLLEGE OF ENGINEERING,
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COUNTRYWIDE CLASSROOM TELEVISION PROGRAMMES

An Appraisal Study

Jagannath Mohanty*
Abanish Rath**

Need of the Study

At present Educational Technology has been given great emphasis both in the developed as well as developing countries of the world for meeting the emerging needs of expansionand improvement of quality in education. Particularly, television has assumed great popularity now a days as potential medium of education.

The Educational Television (ETV) Programmes have been telecast by UGC under the name of Countrywide Classroom. Launched on the 15th August 1984, this ETV service is a general enrichment programme meant for college and university students. Huge expenditure is being incurred on this project and much importance is being given to the qualitative improvement of these programmes. In order to make them more effective and suitable for students of higher education it was felt necessary to make a critical appraisal of the ETV Programmes and to provide feedback to the producers regarding different aspects of the programme through empirical studies. No such studies have so far been made available for the purpose. Hence this present study.

Objectives of the Study

The main objectives of the present study were as follows:

i. to find out the strengths and weaknesses of UGC's ETV programme;
ii. to consider the appropriateness of these programmes;and
iii. to suggest steps for improving the ETV Programmes and making them more relevant for higher education.

Scope of the Study

The investigators took interest in studying the UGC'S countrywide Classroom TV Programmes produced by different agencies like Educational Media Research Centre (EMRC),Audio Visual Research Centre (AVRC), and British Broadcasting Copporation (BBC). The programmes were telecast during the period 18.7.88 to 22.11.88.The Investigators took only 25 programmes as a sample for this study.

Table 1 gives details of the ETV Programmes taken for the study.

Table 1

SI. No	Title of the Programme	Date of Telecast	Producing Agency
01.	Teleteach part:6 Concept attainment model of teaching	18.07.88	EMRC,Pune.
02.	High density of Agro Forestry	18.07.88	EMRC,Ahamadabad.
03.	Teleteach part:7 Concept attainment model of teaching	19.07.88	EMRC,Pune.

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*Director,Academic Staff College,Utkal University, Plot No. 205-A,Sahed Nagar,Bhubanesvar-751007

**Research Scholar

04.	Cancer Matastasis	19.07.88	EMRC,Hyderabad.
05.	Conserve Energy	20.07.88	Film Division India.
06.	Wandering Continent	20.07.88	MCRC,Jamia Millia Islamia University Delhi
07.	Cardiovascular Control	20.07.88	EMRC,Hyderabad.
08.	Drug Control	22.07.88	EMRC,Pune.
09.	Warning Signal	22.07.88	Film Division India.
10.	Rectifiers	03.11.88	EMRC,Hyderabad.
11.	Speeches on Speech	03.11.88	EMRC Hyderabad.
12.	Brown Coal	03.11.88	F.R.Germany.
13.	Pinch of Iodine	08.11.88	AVRC,Jodhpur University.
14.	Enhancing Creative Thinking Part:11	08.11.88	EMRC,Pune.
15.	Non-Invasive Diagnosis	08.11.88	EMRC,Hyderabad.
16.	Power Supply	10.11.88	EMRC,Ahamadabad.
17.	Monsoon Circulation in India	10.11.88	AVRC,Calcutta.
18.	Modern Indian Poetry in English	10.11.88	EMRC,Pune.
19.	Mathematics: A Social Perspective	11.11.88	BBC,London.
20	In Search of Ethnic Dimensions: The Koyas	11.11.88	EMRC,Hyderabad.
21.	Ecosystems in India: Ecomechanics Part:1	11.11.88	EMRC,Pune.
22.	Pulse Circuit	17.11.88	EMRC,Ahamadabad.
23.	Modern Indian Poetry in English	17.11.88	EMRC,Pune.
24.	Enhancing Creative Thinking (Synectics)	22.11.88	EMRC,Pune.
25.	Ayurveda Series, The Silent Sentinels.	22.11.88	Gajapati Ayurveda Institution.

Limitations of the Study

The study was confined to UGC's ETV Programmes meant for higher education only. The data were collected for the study on the basis of direct observation of the investigators. The investigators made occasional discussions with the college students and professors regarding the programmes.

Methodology

At first the investigators prepared an observation Schedule to gather data regarding the assumed objectives, content,format, visuals, voice, language pace etc. of the UGC's ETV programmes. Then the investigator observed the programmes and collected data with th help of observation schedule.

Analysis and Interpretation

The data collected about the UGC's programmes were analysed and interpreted on the basis of its objectives, content, method educational aids used, voice, language etc.

Objectives:

As there was no provision for the supply of programme briefs to colleges and universities before telecasting the programmes, the investigators did not get any definite information regarding the instructional objectives of the programmes. Therefore the investigators took some assumed objectives like knowledge, understanding and application of the UGC's ETV programmes for their assessment. Table 2 shows the extent of emphasis of the assumed objectives.

It is observed from the table 2 that all the programmes emphasized"Knowledge" objective to a great extent. 60% of the programmes emphasized "Understanding" objective to a great extent and 40% to some extent. The application objectives was emphasised to a great extent in 52% of the programmes, to some extent in 28% of the programmes and not at all in 20% of the programmes. It is clear from the above analysis that due importance has been given to different objectives in the programmes.

Content:

Content is of vital importance in making the UGC's ETV programmes relevant, useful and effective. Table 3 gives a detailed picture of the content areas of the programmes taken for present study:

Table 2

Extent of Emphasis on the Assumed Objectives

Extent of Emphasis on	To a Great Extent		To some Extent		Not at all	
Objectives	No. of Programmes	%	No. of Programmes	%	No. of Programmes	%
1. Knowledge	25	100	Nil	-	Nil	-
2. Understanding	15	60	10	40	Nil	
3. Application	13	52	7	28	5	20

Table 3

Distribution of Programmes according to the Content

Content Areas	No. of Programmes	%
1 Education	4(1,3,14,24)	16
2 Agronomy	1(2)	4
3 Physiology (Medical Sc)	5(4,7,13,15,25)	20
4 General Awareness	3(5,8,9)	12
5 Geography	2(6,18)	8
6 Electronics	2(10,22)	8
7 Language	1(11)	4

8 General Science	3(No : 12,16,19)	12
9 Folk Culture	1(No : 20)	4
10 Ecology	1(No : 21)	4
11 Literature	2(No : 17,23)	8

It is evident from the table that the UGC ETV Programmes cover a vast spectrum of subjects catering to the needs of different faculties and levels of clientele but these programmes do not give equal weightage to all the subjects. Some subjects like philosophy, Political Science, Aesthetics were not given due importance.

Adequacy of Content:

So far as adequacy of content is concerned it is found that 92% programmes were adequate and only 8% programmes were Over-loaded with content. Table 4 shows the distribution of programmes according to the adequacy of content:

Table 4

Adequacy of Contents of the Programmes

Overloaded		Adequate		Inadequate	
No.of Programmes	%	No.of Programmes	%	No.of Programmes.	%
2(No.2,25)	8	23(No.1,3,4,92,5,6,7,8,9, 10,11,12,13,14,15,16,17, 18,19,20,21,22,23,24)	92	Nil	

Format:

Table 5 shows the distribution of UGC's ETV programmes according to different formats. It is evident that lecture with Demonstration format was adopted in 32% , lecture with illustration in 20%, Interview with experts in 28% and documentary film in 20%.

Table 5

Distribution of Programmes according to different Formats

Name of the Format	Number of Programmes	%
Lecture with Demonstration	8(N0:1,3.10.11,14,16,22,24)	32
Lecture with Illustration	5(No:2,6,13,18,21)	20
Interview with experts	7(No:4,7,8,15,17,19,23)	28
Documentary Films	5(No:5,9,12,20,25)	20

These four formats were no doubt found suitable and effective for higher education. Other formats like group discussion, dramatization etc. were not given due importance though they would also be quite suitable and effective for higher education. The documentary format in which the narrators were not visible were found to be unattractive. So more emphasis should be given to these formats in which the personality of the narrator influences the viewers and there his scope for interaction.

Visuals: (Quantitative)

Visuals are one of the main component of a format which make the format interesting and effective. Therefore the visuals used in the UGC's ETV Programmes were studied from verious angles. Table 6 shows the number of different visuals used in the programmes.

Table 6

Distribution of Programmes according to Visual Aids

Visuals	To a great Extent		To some Extent		Not at all	
	No.of Programmes.	%	No.of Programmes	%	No.of Programmes	%
1. Activities	3(No:10,20,22)	12	17(1,2,3,4,5,6,7,8, 9,10,11,12,13,14,15, 17,19,23,24)	68	5(No:5 ,16,18, 21,25)	28
2. Two Dimensional	4(No:10,18,19,22)	16	10(No:1,3,4,6,7,40, 11,15,16,21,25)	48	11(No:2,5,8,9,12, 13,14,17,20,23,24)	44
3. Three Dimensional	1(No:19)	4	5(No:7,10,15,16,22)	20	19(1,2,3,4,5,6,8,9,11 12,13,14,17,18,20, 21,23,24,25)	76
4. Real Object	11(No:2,5,12,13,16,17, 20,21,22,23,25)	44	3(No:8,9,10)	12	11(No:1,3,4,6,7,11, 14,15,18,19,24)	44

It is evident from Table 6 that two dimensional aids and Real Objects were used in 56% of the programmes whereas Activities and Three Dimensional aids were utilised in 80% and 24% of the programmes respectively.

Visuals: (Qualitative)

The use and quality of visuals are much more important than the number of visuals. Table 7 & 8 show an assessment of the quality of the visuals.

Table 7

Distribution of Programmes according to the use of Visuals

	Fully		Partially		Not at all	
	No.of programmes	%	No.of programmes	%	No. of Programmes	%
1. Clear	21(No:1,3,4,6,7;8,9,10, 11,12,13,14,15,16,17,18, 19,22,23,24,25)	84	4(No:2,5,21,28)	16	Nil	-
2. Attractive	22(:No:1,2,3,4,5,6,7,10, 14,15,16,17,18,19,20,21, 22,23,24,25)	88	3(No:8,9,12)	12	Nil	-

Table 7 shows that 84%of the programmes were fully clear and 16% of the programmes were partially clear. 88% of the programmes were attractive and lively, whereas 12% of the programmes were partially attractive and lively. But so far as visual aids are concerned UGC's ETV Programmes are highly sophisticated.

Table 8

Distribution of Programmes according to adequacy of exposition of Visuals

	More than adequate		Adequate		Inadequate		No of programmes in which these aids are not used	
	No. of Programme	%	No. of Programme	%	No. of Programme	%	No. of Programme	%
Activity	Nil	-	19(No:1,2,3,4,6,7,8, 10,11,12,13, 14,15,17, 19,20,22,23,24)	76	Nil	-	6(No:5,9,16,18,21,25)	24
Two Dimensional	Nil	-	Nil	-	14(No:1,3,4,6,7,10, 11,15,16,18,19,21, 22,23)	56	11(No:2,5,8,9,12, 13,14,17,20,23,24)	44
Three Dimensional	3(No,10,19,22)	12	3(No:7,15,16)	12	Nil	-	19(No:1,2,3,4,5, 6,7,8,9,11,12,13, 23,24,25)	76
Real Objects	5(No:2,12,20, 21,25)	20	9(No:5,8,9,10,13,16, 17,22,23)	36	Nil	-	11(No:1,3,4,7, 6,11,14,15,18, 19,24)	44

It is evident from the Table 8 that activity, three dimensional and real objects were utilised in the programmes as mentioned against them. But two dimensional Visuals like maps, charts, diagrams and other visuals were used in some programmes for short time so that the viewers could not view them adequately.

Voice:

The speach plays an important role in teaching learning process. Unless the voice is clear, it is very difficult to make the programmes effective. Table 9 shows the distribution of UGC's ETV Programmes according to the clarity of voice.

Table 9

Distribution of Programmes according to the clarity of Voice

Distinct		Partially Distinct		Indistinct.	
No.of Programmes	%	No of Programmes	%	No.of Programmes	%
20(No:1,2,3,5,6,7,9,10, 12,13,14,15,16,18,19,20, 21,22,24,25)	80	5(No:4,8,12,17,23)	20	Nil	-

So far as the clarity of thevoice is concerned, it is found from the Table 9 that in 80% of the programmes, the voice was distinct and in 20% programmes the voice was partially distinct.

Pace:

As regards the speed of voice, it is evident from Table 10 that in 16% of the programmes the speed of the voice was slightly high, in 80% of the programmes the speed was normal and in 40% of the programmes the speed was slightly slow.

Table 10

Distribution of Programmes according to the speed of the Voice

Quick		Normal		Slow	
No.of Programmes	%	No.of Programmes	%	No.of Programmes	%
4(No:4,9,15)	16	20(No:1,3,5,6,7,8,10,13,11, 12,14,16,17,19,20,21,22, 24,23,25)	80	1(No:18)	4

Language:

The language of the UGC's ETV Programmes was English. In 20%(4,12,16,17,23) of the programmes English was spoken with varied accent by foreigners like English, German & American.

Findings

i. At present the UGC's ETV programmes are announced on every Saturday evening, and one day before the transmission. Only the titles of the programmes are announced from which it is difficult to guess the subject matter and objectives of the programmes. Except this there is no other source from where one can get information regarding UGC's ETV programmes; *(University News announces these programmes 10-15 days in advance in each of its issues — Editor)*

ii The knowledge objective has been realised to a great extent in all the programmes whereas understanding and application objectives have been realized to a great extent in 60% and 52% of the programmes respectively;

iii. Due weightage has not been given to some content areas like Philosophy, Political Science, Anthropology, Arts and Crafts etc.

iv. Only 8% of the programmes were found over loaded with content;

v. Lectures with demonstration and interview with experts were found more interesting and attractive, whereas documentary programmes did not kindle of the viewers;

vi Some formats like group discussion, dramatization, project method etc. were not given due importance;

vii. Almost all programmes were enriched with visual aids like activities, two dimensional, three dimensional and real objects. But the presentation of the two dimensional and real objects was not satisfactory because the period of exhibition of the two dimensional aids on the screen was very short.

viii. In about 84% of the programmes the visuals were very clear and in rest of the programmes these were partially clear.

ix. Visual aids in 88% of the programmes were found lively and attractive.

x. As many as in 80% of the programmes, the voice was distinct and in the remaining 20% of the programmes it was partially so.

xi. In some of the programmes (about 16%) the pace of communication was found a bit fast and in 4% of the programmes the pace was slow.

Suggestions

i. Encouragement should be given to organise Tele Club with the cooperation of colleges and universities. Any body can be a member of this Club which will conduct discussion after telecasting of a programme and clarify the doubts of the viewers;

ii. Synopses of the programmes and other necessary information regarding different programmes should be provided to Tele-Clubs, colleges and universities at least fifteen days ahead of the telecast dates;

iii Since the charts, diagrams and the main points were kept on the screen for a very short a time, it was not possible on the part of the viewers to note down the main points. It is desirable that adequate time should be allowed to them for viewing and noting down the points;

iv The programmes are telecast at 12.45 PM and the same programmes are repeated at 4 PM. Both the time are not convenient for the students and the teachers whose working hours are from 10 AM to 5 PM. Therefore the programmes should be telecast once in the working hours and once in the evening or late night hours.

v. Due attention shoulh be given to the production of programmes on various faculties;

vi. Attempts should be made to give proper weightage to formats like group discussion, dramatization etc.

vii. Proper attention should be given to the clarity and speed of voice.

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TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Reservations and Standards of Medical Service

"For a number of years, the Government of Tamil Nadu has been following a policy of specified seat reservation for backward classes and the down-trodden. This has not resulted in diluting the standard of medical service. There has been no complaint that our doctors are less qualified or skilled. In fact they are in great demand in advanced countries, affluent Gulf countries and other developing countries", said Dr. Kalaignar M. Karunanidhi, Chief Minister of Tamilnadu while delivering the Convocation Address at the first convocation of Doctor MGR Medical University, Madras. Excerpts

CONVOCATION

Thiruvalluvar, even 2000 Years ago, devoted a whole section in the Kural to "Medicine", stating:

> *"Disease, its cause, what may abate the ill;*
>
> *Let leech examine these, then use his skill"*
>
> *(948-Trans. Pope)*
>
> and
>
> *"No need of medicine to heal your body's pain,*
>
> *If what you ate before digested well, you eat again."*
>
> *(942-Trans. Pope)*

and further:

> *"For patient, leech, and remedies, and him who waits by patient's side;*
>
> *The art of medicine must fourfold code of laws provide."*
>
> *(950-Trans. Pope)*

The sick, the healer, the suitable medicine and he who tends are the fourfold constituents of Medical Science, today.

Thousands of years ago, ancient day scholars like Agathiar, Thirumoolar, Theraiyar and Pulipuni Bhogar had given this world invaluable truths in the form of traditional Indian Medicine and many other cures, which are now being neglected.

In this age of great scientific research and discoveries, there still exists a bridge between Indian medicine and modern medicine. For instance, - to cure Jaundice, in those days, the juice of the herb "Keezhanelli" was extracted and given. Today the same juice is scientifically extracted, refined, concentrated and given in the form of capsules.

We must not forget that the lofty and imposing towers of modern medicine stand firmly on strong foundations laid by ancient schools of Indian medicine!

It is 185 years since medical education was started in Tamil Nadu. The Madras Medical College was started in 1835, followed by Stanley Medical College in 1938. The growth of medical education in foreign countries, discoveries and advancement in science and technology have all helped in continuously widening the scope of medical education in our own country.

Today, the Government of Tamil Nadu runs ten Medical Colleges, one Dental College and two Institutes of Rehabilitation Medicine. It is not enough if we have qualified and efficient doctors and sufficient number of hospitals - they must be humane, they must act with consideration and commit themselves to cure the sick and save precious lives!

In the last one and a half years, we have had to face several impossible and major demands, for which, sometimes no solution could be found. Since I have also suffered the same constraints and physical limitations faced by the ordinary man, I feel deeply committed to ensure that the ailing poor shall not feel the inadequacy of medical treatment. In this State, no patient, however poor, should feel the lack of modern medical facilities. For this, we should ensure that proper training is imparted to doctors, technical and medical assistants and para medical staff.

For the past 30 years, members of the medical profession have been debating on the pros and cons of creating a University of Public Health. This debate was in existence even during the days of Dr. A. Lakshmanaswami Mudaliar. In universities where agriculture was a part of the regular curriculum, once it was permitted to develop as a specialisation, it resulted in the blooming of several agricultural Universities. This development was the root cause for the "Green Revolution" and the "White Revolution". Education, today, has grown, expanded and spread to embrace many branches. It is the responsibility of the policy makers to ensure that the standards and development of these departments do not diminish. This State concentrated next on the setting up of Engineering Universities. This helped in the growth of Engineering departments, increased opportunities for research and induced engineering graduates to strive for excellence in the field of engineering, thereby fulfilling their dreams.

The creation of Medical Universities will help in raising the standard of Medical Education, Medical Practice and Public Health.

We are all aware that there exist in matters of policy and education, considerable differences between Medical Universities and other universities. But only a few are aware of the differences that exist in administrative procedures. Whatever may be the obstacles, there is no second thought on the importance of raising the standard of education and practice for medical students in our State.

We are in an age where specialisation is the order of the day - in all the fields. We have to keep pace with the latest developments in every field of medicine, which is inevitable.

We are all aware that medical graduates and postgraduates from Tamil Nadu have the capacity and excellence to be reckoned on par with their brilliant counterparts in the medical field the world over!

For a number of years, the Government of Tamil Nadu has been following a policy of specified seat reservation for backward classes and the down-trodden. This has not resulted in diluting the standard of medical service. There has been no complaint that our doctors are less qualified or skilled. In fact they are in great demand in advanced countries, affluent Gulf countries and other developing countries.

However there is a widespread feeling that we have not been able to match the developed nations in scientific and technological research. This is mainly due to financial constraints, lack of full-time research, training and basic facilities. The State Government, for its part is trying its best to bridge the gap by setting up new libraries and updating research facilities. The Government of Tamil Nadu has come forward to grant substantial financial aid to "TAMARAI"- a Post Graduate Medical Research Institute, set up last year.

The faculties of Engineering, Law, Science, Arts and Languages come under the purview of the Ministry of Education, of Central and State Governments. These receive a reasonable grant from the University Grants Commission, which functions as an autonomous body under the Central Government's Ministry of Education. But the Medical Education Department comes under the Ministry of Health. The Central Government gives full aid for Central Government institutions like All India Medical Science Institute, but these fulfil the needs of only a small minority. Most Medical Colleges in our country are being run by the State Governments, with full financial aid. At present, there is no body, equivalent to the University Grants Commission under the Ministry of Health.

Though the idea of starting a Medical University was there even when Dr. A.L. Mudaliar was the Vice Chancellor of the Madras University, it could not become a reality due to lack of Central Government grants. Dr.A.L. Mudaliar created the Arts and Science Complex at Chepauk, Engineering and Science Complex at Guindy and Medical Science Complex at Taramani. The Engineering Complex later developed into an Engineering University. This has very good scope for rapid growth through equal financing by the State Government and University Grants Commission.

Now a separate Medical University has been created.

To develop the University and its complex, the State Government has to secure the necessary finance. I am convinced that this University is truly committed to Medical Research and discovery of new cures for diseases. There are many more Departments where research is needed for improving public health. To help our interest in the growth of the pharmaceutical industry in Tamil Nadu, the Institute of Pharmaceutical Sciences must do the needful. As there is a gap between the demand and supply of qualified medical assistants it is vital to upgrade necessary graduation and postgraduation facilities for this section. To improve the health of our people, further research in the fields of general medicine and epidemiology must be undertaken. Attention must also be given to the age old schools of Indian medicine like Siddha medical cure, which has been in practice, in our State for many years. We must adapt such knowledge to suit modern science. For undertaking such research work, huge financial resources would be needed. The Government plans to use this University to achieve such goals. This government will do its utmost to help this University implement the policy on Medical Research.

Often, we have been accused of only following western methods of prescribed treatment and cure, and not giving enough attention to the needs of the ailing rural folk. I hope this University will strive to create a

(contd. on page 22)

Academic Freedom and Accountability

The Academic Staff College of Pondicherry University recently conducted a seminar on Academic Freedom as part of the training of university and college teachers through orientation. The seminar focussed on the issues of academic freedom for the teaching community vis-a-vis their accountability.

Dr. N. Rajamony, Director, Academic Staff College, Pondicherry University, who chaired the seminar, outlined the various dimensions of autonomy and accountability at university, college, department and individual teacher levels. He described in detail the relationship between academic, administrative and financial autonomy and how much of it and in what form they were desirable at different levels of faculty in the higher education system. He also emphasised the need for monitoring academic freedom and accountability of teachers.

It was felt at the seminar that academic faculty in higher education should have complete academic freedom regarding design and development of curriculum, developing detailed contents for each subject area, strategies to be adopted, design and conduct of tests and examinations and necessary administrative and financial freedom to the extent needed for academic performance.

Teachers from the Colleges of Tamil Nadu, Kerala, Andhra, Gujarat, Rajasthan, Karnataka, Maharashtra and Orissa participated in the Seminar. Each participant presented in detail his/her experiences regarding the academic freedom enjoyed, what was desired and facilities for teacher development.

No Compromise on Standards

There should not be any compromise with the standards of education and the quality of the course material supplied to the students, said Prof. Jafar Nizam, Vice-Chancellor of Kakatiya University while inaugurating the academic session for 1990-91 of the School of Distance Learning & Continuing Education (SDLCE) at the Kakatiya University recently . He stressed the need to provide the most effective teaching to erase the impression that the students of the School were less privileged than the regular students of the University.

The School has an student enrolment of 3200 as against 1500 of last year. 28 volumes of the course material on different subjects of study published by the School were released on the occasion.

Dr. K. Murali Manohar, Director of the School, presenting the report, traced the growth and development of the institution during the last two years.

Prof. V. Bhasker Rao, Principal of the University Campus College, presided.

Central Assistance for Alagappa University

The University Grants Commission has sanctioned a sum of Rs.1.40 crores as Development Assistance to the Alagappa University for 8th Plan period (1990-95). Out of the sanctioned amount, the UGC will release a sum of Rs.27 lakhs towards the development programmes for the academic year 1990-91.

The UGC has commended the work done by the Alagappa University, which was established in 1985, for introducing socially relevant and innovative departments and courses of studies within a short span.

As part of the 8th Plan development programme, a Women's Hostel and a Humanities Block at a cost of Rs.20 lakhs each are proposed be constructed. Besides, a sum of Rs.20 lakhs each for procuring books/journals and modern equipments have also been sanctioned by the UGC.

News from Agril. Universities

Research Council Meets at TNAU

The 28th State Level Research Council and Extension Education Council Meeting was held at Tamil Nadu G.D.Naidu Agricultural University on 26.11.1990. The heads of state development departments, Joint Directors, representatives from voluntary organisations, and scientists of the University attended.

Presiding over the inaugural function, Dr.S.Jayaraj, Vice- Chancellor of TNGDNAU stressed the need for intensive research and development of Integrated Farming System and said that the proven models were to be field tested through on-farm trials in farmers' fields. He called upon the participants to consolidate the biological environmental and social constraints of rich production and commercially important major crops, with the help of the extension officials of the Department of Agriculture in all the agricultural divisions of Tamil Nadu. He also emphasised the need for critically identifying the constraints in agricultural production in each district.

The Vice-Chancellor hoped the findings of TNGDNAU on the mass production of Sporocarp of Azolla will provide a breakthrough in rice production.

The Research Council expressed its concern over the huge loss of nitrogen, to the extent of 30% in the soil by volatization, runoff and teaching. It was also felt that a team of agricultural engineers and horticultural scientists might study the efficiency of the various alternative sources of energy for designing cold storages in the state. Emphasis was laid on need based research on crops suitable for the vast dryland tracts planned for the ensuing year.

In his introductory remarks, Dr.S.Chellaiah, Director of Research lauded the success of the mission mode researches launched in major crops. He also hoped for early development of hybrid rice and a suitable variety resistant to blast and brown plant hopper replacing the existing IR 50. He said that the centralised instrumentation facility would pave the way for effective utilisation of valuable instruments for farm research.

Shri Elumalai, Director, Agricultural Marketing, called upon the participants to develop appropriate cold storage designs to be installed in three places of the state. Shri Annadurai, MLA, envisaged closer linkage of extension system with the farming community. He also said that the farmers were to be educated on the beneficial insects. Professor Andiappan, Dean, Annamalai University called for greater emphasis on mushroom production and bio-insecticides. Dr. Madhava Rao suggested that the market acceptability of Mango variety be studied and improved.

Themes for the papers presented at the meeting included 'Research thrusts in Bio-technology and Plant Molecular Biology, 'Nitrogen use efficiency', and 'Environmental aspects in Agriculture'.

Evolving New Papaya Varieties

Realising the importance of Papaya fruit crop, the Tamil Nadu G.D.Naidu Agricultural University (TN GDNAU) started research on papaya with the aim of developing varieties for high yield potential, high papain content and uniform fruit size. Considerable success in this has been obtained.

So far, six papaya varieties have been/released by TNGDNAU viz: Co.1 (1958), Co.2(1972), Co.3 and Co.4 (1982), Co.5(1984) and 15g. of dried papain per fruit, which is the highest yield ever recorded. The Co.2 and Co.6 are dual purpose varieties for table purpose and papain yield.

The present day research focus of the horticultural scientists is the development of suitable papaya varieties for high elevation and to withstand cold conditions.

Dr. (Mrs) Seema Dawar, Horticultural Scientist of Punjab Agricultural University, Ludhiana visited TNGDNAU and based on the interaction, it has been proposed to evolve papaya varieties with cold hardiness that can be grown in higher altitudes and in North India. For this programme, the cold tolerant varieties from South Africa and USA are being introduced. Wild papaya type found on the Nilgiris shows frost tolerance and this would also be involved in breeding frost resistant types of papaya at this University which will have wide adaptability in North Indian condition also.

News from UGC

Countrywide Classroom Programme

Between 17th December to 31st December, 1990 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

1.00 p.m. to 2.00 p.m.

17.12.90

"Classical Mechanics - 12 : Rigid Bodies - Kinematics"

"Strategic Management - Evolution and Content"

"An Interview With Dr. Swaminathan"

18.12.90

"Plant Pigments "

"Instructional Process in Industrial Training"

"Accupuncture"

19.12.90

"Manufacture of Newsprint"

"Man and Environment"

"Chromosomes and Sex Determination"

20.12.90

"Look at your Heart Through Bio-signals"

"Trouble Shooting Technique"

"A Word's Worth - I"

21.12.90

"Beyond Vision EMRC, Ahmedabad"

"Madhusudan Ojha's - Vedas & Vigyan AVRC, Jodhpur"

"Eutrophication EMRC, Poona"

22.12.90

"What is Cerebral Palsy?"

"Modern Theatre–I : Theatre Architecture EMRC, Ahmedabad"

"Folklore Culture AVRC, Madurai"

23.12.90

No Telecast

24.12.90

"Classical Mechanics - 13 : Rigid Bodies : Dynamics"

"Objectives of Commerce Education - II"

"War on Rats"

25.12.90

No Telecast

26.12.90

"Electrical Circuits - 5"

"The Romance Of Maps - I: The perception of Space"

"Theory of Evolution"

27.12.90

"Sieve Analysis TTTI, Bhopal"

"Be a Folklorist AVRC, Madurai"

"A World's Worth - II EMRC, Hyderabad"

28.12.90

"India Elects"

"A Chance For Survival"

29.12.90

"Hour USA : OMNI: The New Frontier-Cerebral Plasy, Suzanne Ciani"

"Sonskrit Theatre : Theatre Architecture - III"

"An American Experience in Indian Folklore"

30.12.90

No Telecast

31.12.90

"Objectives of Commerce Education - III"

"The Pursuit"

2nd Transmission

4.00 p.m. to. 5.00 p.m.

17.12.90

"Classical Mechanics - 6 : Universal Gravitation"

"Management and Organisation"

"The Pest Story"

18.12.90

"Volumes of Reacting Gases"

"Nutrition Education in India"

19.12.90

"Vibrations- I"

"The Living Heritage of Temple Architecture"

"From Molecules in Space to Life on Earth"

20.12.90

"COBOL - 6 : Divisions"

"Gunther Haese"

"Towards Better Spoken English"

21.12.90

"A Talk on What is the Study of Astrophysics"

"Felicitous Folklore"

"Green House Effect"

22.12.90

"Consumer Protection - I : An Introduction"

"Modern Paintings - An Introduction"

23.12.90

No Telecast

24.12.90

"Classical Mechanics - 7 : Galilean Invariance"

"Theory of Games - I : Strategy Formulation"

"Twards the Mysteries of Life"

25.12.90

No Telecast

26.12.90

"Vibrations - II"

"Child in Margin"

"The Gene Story"

27.12.90

"COBOL - 7 : Data Division- I"

"The Sun's Hidden Treasure"

"Art of Translation"

28.12.90

"Algebraic Structure - I : Theory of Sets"

"Mada Women's Mela"

"Bio-diversity of India"

29.12.90

"Consumer Protection - II : Right to Safety"

"Kuchamani Khyal-The Endangered Folk Theatre-I "

"Swimming"

30.12.90

No Telecast

31.12.90

"Objectives of Commerce Education - 3"

"The Pursuit"

Reservations and Standards of Medical Service

(Contd. from page 18)

closer relationship between the Indian rural folk and medical practitioners and better co-ordination between the various medical organisations and activities of the medical profession.

Most Post-Graduates among you are in government service. Some are practising privately. Wherever you may be posted, your primary objective must be to serve. Modern living has created a "Money and Status" based culture. I believe that it is illogical to expect the medical profession alone to be radically different! Still, I also believe that earning money will not stand in the way of earning fame and name through dedicated public service! The desire to increase one's knowledge, committment to serve, to achieve fame through achieving one's goal, the desire to become affluent, are all interlinked and interwoven!

Through service and integrity in work, it is well within your scope to earn a good name, secure a growing clientele and thereby establish a comfortable standard of living.

News From Abroad

University Administrators to Meet in The Netherlands

The Seventh International Meeting of University Administrators will be held at the University of Twente, The Netherlands on 21- 26 July 1991. Convened by the Conference of Registrars and Secretaries, and the Conference of University Administrators of the United Kingdom, the series of International Meetings of University Administrators began in 1981 in United Kingdom. Since then, Meetings have been held in Hongkong, Canada, India, Australia and the United States.

The seventh meeting will explore three themes namely, Standards of Professionalism in University Administration, International Co-operation, and the Entrepreneurial University. Standards of Professionalism in University Administration will focus on staff development and training, evaluation and appraisal, devolution and decentralisation, and ethical and professional standards. International Cooperation will attempt an appraisal of the real benefits from 'Internationalisation' and 'Globalisation' of the Higher Education Sector as also how best the collaborative schemes work. The Entrepreneurial University will review as to how its efforts at being relevant to the 'market-place' and seeking alternative sources of funding do not deflect the university from its primary purposes and continue to be of net benefit to the university. Papers for the meeting should reach, latest by 1st March 1991, Richard Mawditt, Secretary and Registrar, University of Bath, Claverton Down, Bath BA2 7AY AVON, UK.

Further details about the meeting regarding fee, accommodation, detailed programme etc. can be had from Drs. Frans C. Verschoor, Registrar and Secretary, University of Twente and Chairman, Organising Committee, Seventh International Meeting, Congress Bureau UT, P.O.Box 217, 7500AE ENSCHEDE, The Netherlands.

Admission to French Universities

Indian nationals seeking admission into French universities at the undergraduate level (first cycle), must undergo the formalities of a pre-inscription (Provisional enrolment). Pre- inscription forms will be available from 1st December 1990 to 15th January 1991 at the : C.E.D.U.S.T.,French Centre for University, Scientific and Technical Documentation, Embassy of France, 2, Aurangzeb Road, New Delhi - 110011.

Candidates seeking admission into the first cycle will have to undergo a French language test on Wednesday 20th February 1991. For candidates from Delhi, this test will be held at the C.E.D.U.S.T. For those outside Delhi, it will be held at the *Alliance Francaise* nearest to their place of residence.

Candidates residing in Delhi are requested to collect the forms from C.E.D.U.S.T., while those from outside Delhi are required to make a written request at this Office. The pre-inscription forms will be mailed to them by Registered Post.

For admission into the first cycle of a French university, it is preferable for the candidate to have a Bachelor's Degree. However a candidate with a (10 + 2) may appear for the entrance examination. The university to which he / she applies will decide upon the equivalence to be granted. Any other examination which makes a candidate eligible for university studies in his/her own country is also accepted for the purpose of enrolment

This procedure does not apply for Engineering studies. Those interested in enrolling themselves for Engineering are required to write directly to the French institution of their choice.

No Scholarships are offered at the undergraduate level of studies.

Candidates have to meet their own expenses (tuition fee, living expenses, travel etc.) in foreign currency (roughly 40.000 French Francs per Year).

This procedure is not applicable to candidates with a French "Baccalaureat".

Panjab University, Chandigarh

Department of Commerce & Business Management

Invites applications for admission to:

1	**Master of Business Administration (MBA)** (Two Year Full-time course) -24th batch	-30 Seats
2	**Master in Personnel Management and Industrial Relations (MPM&IR)** (Two Year full-time programme) -14th batch	-15 Seats
3	**Post-Graduate Diploma in International Trade (PGDIT)** (One year full-time programme) -13th batch	-15 Seats

Commencing July, 1991

Eligibility:

(1) MBA

A recognised Bachelor's or Post-graduate degree in any disciplone-Agriculture, Arts, Commerce, Engineering, Law, Science, Technology etc. with at least 50 per cent marks in the aggregate OR Chartered Accountant OR Cost and Works Accountant OR Company Secretary OR AMIE.

(2) MPM & IR

(a) A Bachelor's degree with at least 55% marks in (i) Arts with Psychology/Sociology/Economics/Public Administration/Social Work, OR (ii) Commerce, OR (iii) Law OR (iv) Company Secretary, OR (b) A Bachelor's degree in Engineering with at least 60% marks; OR (c) A Post-graduate degree in any one of the Arts subjects mentioned in (a) (i) above or M.Com with at least 50% marks, OR (d) A Post-graduate Diploma in Personnel Management & Labour Welfare; OR (e) A Bachelor's degree in any faculty with at least 50% marks and two years' work experience at executive level after graduation.

(3) PGDIT

(a) A Bachelor's degree in any disciplone with at least 55% marks OR (b) A Master's degree with at least 50% marks OR (c) Chartered Accountant/Cost and Works Accountant/Company Secretary OR (d) A Bachelor's degree in any faculty with at least 50% marks and two years' work experience at executive level after graduation.

Note: (a) Candidates appearing in Final Degree examination in **April/May 1991** or earlier are also eligible to apply.

(b) Reservations: Scheduled Caste (15%), Scheduled Tribe (7/1/2%) and Backward Class (5%) with concession of 5% marks in the aggregate; Physically Handicapped (3%); Sports (5%); Military Personnel (upto 5%); for son/daughter/husband/wife/brother/sister of persons killed/incapacitated in November, 1984 riots and of persons killed/incapacitated in terrorist violence in Punjaband Chandigarh (2%); provided they satisfy the selction criteria.

(c) Those who have passed their last examination from a University other than Panjab University are required to submit MIGRATION/ELIGIBILITY CERTIFICATE/S, if offered admission.

Admission Test:

All initially eligible candidates will take a combined written test to be held at different centres in India on **January 27, 1991 at 9.00 a.m.**

For Blank application form and other relevant details write to: The Deputy Registrar, Department of Commerce and Business Management, Panjab University, Chandigarh 160 014, enclosing therewith crossed Bank Draft in favour of REGISTRAR, PANJAB UNIVERSITY, CHANDIGARH payable at Chandigarh for Rs.80/- for one course and Rs.120/- for two or more courses and a self-addressed envelope (29x18 cms.) bearing Rs.6/- stamps.

Request for supply of application forms received by post after December 20, 1990 will not be entertained.

Application forms will also be available at the office of the Department between 2.00 p.m. and 5.00 p.m. on all working days upto **December 27, 1990.**

Last date for receipt of completed application forms is upto **December 28, 1990, 5.00 p.m.**

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology. Educational Planning, Educational Administration, Teaching & Teachers' Training. Examinations, Economics of Education and Country Studies . Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed on the latest acquisitions through our column 'Additions to the AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

ADDITIONS TO AIU LIBRARY

Adiseshiah, Malcolm S, **Ed. Eighth plan perspectives.** New Delhi, Lancer International, 1990. viii, 281p.

Association of Commonwealth Universities. **What can we do for our countries? The contribution of universities to National development.** London, Author, 1988. 536p.

Association of Indian Universities. **Handbook of Distance education 1990.** New Delhi, Author, 1990. 101p.

Ball, Christopher and Eggins Heather, **Ed. Higher education into the 1990s : New dimensions.** Milton Keynes, SRHE & Open University Press, 1989.138p.

Bhagia, Nirmal and others. **Educational administration in India and other developing countries : Challenges, tasks and training.** New Delhi, Commonwealth Publishers, 1990. vii, 229p.

Birla Institute of Technology & Science. **Improbable achievement : BITS - A profile of change.** New Delhi, Wiley Eastern Limited, 1990. x, 224p.

Commission of the European Communities. **Advanced training in the European community, : A guide to selected opportunities.** Brussels, Author, 1990. xix, 577p.

Committee for Review of National Policy on Education. **Perspective paper on education.** New Delhi, Author, 1990. 45p.

Dube, S C. **Tradition and development.** New Delhi, Vikas, 1990. viii, 368p.

Fishwick, Wilfred, **Ed. Structures of technological education and contributing social factors.** Paris, Unesco, 1988. 231p.

Gupta, S P. **Indian science in the eighties and after.** Delhi, Ajanta , 1990. 120p.

Harris, Sherry S, **Ed. Accredited institutions of postsecondary education 1988-89 : Programs-candidates.** Washington, American Council on Education, 1989. x, 521p.

Indira, R. **Women in technical education : A sociological study.** Delhi, Sharada Prakashan, 1989. 95p.

Iqbal Narain. **Pages from a Vice-Chancellor's diary.** Delhi, Chanakya , 1990. 185p.

Ministry of Health & Family Welfare. **Health Information India 1989.** New Delhi, Author, 1989. xxi, 313p.

Ministry of Information and Broadcasting. **India 1990 : A reference annual.** New Delhi, Author, 1990. 929p.

Misra, R G and Gurvinder Kaur. **Reservation policy and personnel selection.** New Delhi, Uppal, 1990. viii, 281p.

Organisation for Economic Co-operation and Development. **Education and the economy in a changing society.** Paris, Author, 1989. 117p.

Pandey, Ram Shakal and Sharma, Uma Rani. **Educational philosophy of Sarvepalli Radhakrishnan.** Ambala, Associated Publishers, 1990. 155p.

Poster, Cyril and Kruger, Angelika, **Ed. Community education in the Western World.** London, Routledge, 1990. xvi, 207p.

Reed, David W. **Spirit of Enterprise : The 1990 Rolex awards.** Bern, Buri International, 1990. xxii, 489p.

Ruhela, S P and Singh, R P. **Trends in Modern Indian Education : Essays in honour of Prof. S N Mukerji on his 81st birthday.** New Delhi, Uppal, 1990. 468p.

Seminar on education and social change held as part of the Dr. Sarvepalli Radhakrishnan Centenary Celebrations (New Delhi)(1988). **Proceedings.** New Delhi, Rajya Sabha Secretariat, 1988. 39p.

Shah,Vinita. **Human resource development in the building industry : A study in Bombay.** Bombay, National Institute of Construction Management and Research, 1990. xii, 132p.

Simons, Helen and Elliott, John, **Ed. Rethinking appraisal and assessment.** Philadelphia, Open University Press, 1989. 198p.

Tarlok Singh. **Social science research and problem of poverty.** New Delhi, Concept , 1990. xxviii, 468p.

Thirwani, R J. **Restricting brain drain : For fastest industrial development in India.** New Delhi, Modernising India Consultants, 1990. 176p.

Unesco Principal Regional Office for Asia and the Pacific. **Innovation in construction of small secondary schools in Thailand.** Bangkok, Author, 1990. 51p.

Van Vught, Frans A, **Ed. Governmental strategies and innovation in higher education.** London, Jessica Kingsley, 1989. 233p.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities.

HUMANITIES

Philosophy

1. Das, Juthika. **Karl Jaspers and neo-advaitism.** Gauhati. Dr Nilima Sharma, Reader, Department of Philosophy, Gauhati University, Guwahati.

2. Surendra Kumar. **Bharatiya darshanon mein ahinsa tatva ka tarkik evam manovaigyanik vishleshan.** Gurukula. Dr Vijayapal, Department of Philosophy, Gurukula Kangri Vishwavidyalaya, Hardwar.

Language & Literature

English

1. Bhattacharya, P. **Mysticism, romanticism and nationalism in the poetry of Rabindra Nath Tagore.** Gurukula. Dr Narayan Sharma, Reader, Department of English, Gurukula Kangri Vishwavidyalaya, Hardwar.

Bellow. Kurukshetra.

3. Nair, Lakshmi Devi. **A stylistic analysis of J M Synge's plays with special reference to their discoursal features.** Bangalore. Prof Hasan Mansur, Department of English, Bangalore University, Bangalore.

4. Palia, Katayun Kyamas. **Communication strategies and learner profiles: A study of interlanguage talk in the context of English as a second language.** Baroda.

5. Rajan, P K. **Humantistic ambivalence in the novels of Mulk Raj Anand: A dialectical approach.** Kerala. Dr K Ayyappa Paniker, Prof and Head (Retd), Institute of English, University of Kerala, Trivandrum.

6. Ray, Sephali. **Error analysis of English used by the Bengali students: Based on the writing of the B A Hons. students of Calcutta colleges.** Calcutta.

7. Uppal, Mohinder Pal. **Semiotic study of Aldous Huxley's Brave New World and George Orwell's Nineteen Eighty Four.** Punjabi. Dr V Parkasm, Department of Anthropological Linguistics, Punjabi University, Patiala and Dr Surjit Singh, Department of Anthropological Linguistics, Punjabi University, Patiala.

8. Upvinder Kaur. **Patterns of linguistics variation in social context in Mulk Raj Anand's Coolie.** Punjabi. Dr Surjit Singh, Department of Anthropological Linguistics, Punjabi University, Patiala.

Sanskrit

1. Arvind Mohan. **Puranik kathayon per adharita beesvin shatabadi ke pramukha rupakon ka alochnatmak adhyayan.** Punjabi. Dr Ravinder Kaur, Department of Sanskrit, Punjabi University, Patiala.

2. Bijendra Kumar. **Sri Vaisnavadasa rachit Siddhanta-Mandakini ka adhyayana.** Delhi.

3. Dharm Vir. **Dayanand Saraswati ke jiviniparak Sanskrit kavyon ka alochnatmak adhyayan.** Panjab.

4. Gupta, Neelam. **Kashmir Shaiv darshan mein Samanand ka sthan.** Jammu. Dr K Wali, Prof, Department of Sanskrit, University of Jammu, Jammu.

5. Harishchandra. **Ayu sanvardhan vedic samhitayon ke paripekshya mein.** Gurukula. Dr Bharat Bhusan, Reader, Department of Vedic Literature, Gurukula Kangri Vishwavidyalaya, Hardwar.

6. Kusam Lata. **Mahakavi Bhavabhuti ke natakon mein bimbyojna.** Panjab.

7. Mainali, Taranath. **Nyaskar ke paripekshya mein kashika vritti ke pratham dwitya adhyayasth padkrityon ka sameekshatmak adhyayan.** Gurukula. Dr Ramprakash, Lecturer, Department of Sanskrit, Gurukula Kangri Vishwavidyalaya, Hardwar.

8. Rajender Kaur. **Devraj: Kavi aur kavya. Gurukula.** Dr Nigam Sharma, Ex Reader, Department of Sanskrit, Gurukula Kangri Vishwavidyalaya, Hardwar.

9. Seth, Chandee. **A critical study of the drama Mudrarakshasa of Visakhadatta.** Dibrugarh. Dr P P Upadhyayya, Reader (Retd), Department of Sanskrit, Gauhati University, Guwahati.

10. Sharma, Rameshchandra. **Acharya Rudrat aur Mammat: Tulnatmak adhyayan.** Devi Ahilya. Dr Kedarnarayan Joshi, Department of Sanskrit, Vikram University, Ujjain.

11. Sharma, Satish Kumar. **A comparative study of Mahabhashy and Kashika-Vriti. Panjab.**

12. Subramanyam, Nimmagadda Satya Venkata. **A study of Telugu and Sanskrit Vasucharitras.** Andhra.

13. Sukhda. **Pramanlochan nyaye, Bodh, advait vedant aur purva mimansa ke paripekshya mein.** Gurukula. Dr Nigam Sharma, Ex Reader, Department of Sanskrit, Gurukula Kangri Vishwavidyalaya, Hardwar.

14. Udey Bhan. **Vedadhyayan mein Aryasamaj ka yogdan.** Panjab.

15. Virja, Anand Kumar. **Maharshi Dayanand ke Rigved bhashya yogic prakriya ke paripekshya mein ek adhyayan.** Gurukula. Dr Satyavrat Rajesh, Reader, Department of Vedic Literature, Gurukula Kangri Vishwavidyalaya, Hardwar.

Punjabi

1. Grewal, Baljit Kaur. **Punjabi istri novelkaran de novelan vich istri dee azadi dee samasya.** Panjab.

2. Harnek Singh. **Guru Ravidas: Jeevani te vani dee pramanikta.** Panjab.

Hindi

1. Dash, Aswini Kumar. **Ram Chandrika aur Vaidehish Vilas ka tulnatmak adhyayan.** Berhampur. Dr Sudansu Kumar Nayak, Lecturer, Department of Hindi, R D Women's College, Bhubaneswar.

2. Galge, Gangadhar S. **Anudit Hindi sahitya ko Dharmyug kee den, 1960-1987.** Gulbarga. Dr Shivaraj Hallikhed, Department of Hindi, Gulbarga University, Gulbarga.

3. Rajaram. **Satven aur athaven dashak ke upanyason mein parivarik sangharsh.** Osmania.

4. Ramanathan, K M. **A critical study of Dr Shyam Singh Shashi's poetry.** Bangalore. Dr Kuldeep Chandra Gupta, Reader, Department of Hindi, Seshadripuram College, Bangalore.

5. Shukla, Jayantkumar. **Bhartendu ka khari boli gadya-bhasha ka anusheelan.** Patel. Dr A P Mishra, Reader, Department of Hindi, Sardar Patel University, Valllabh Vidyanagar.

6. Shukula, Rashmi. **Hindi kee chhayavadi kavita mein vedna tatva.** Devi Ahilya. Prof Ganesh Datt Tripathi, Department of Hindi, Government College of Arts and Commerce, Indore.

7. Singh, Sudha. **Balwant Singh ke upnyason ka samajshastriya adhyayan.** Punjabi. Dr Chaman Lal, Department of Hindi, Punjabi University, Patiala.

8. Sinha, Deepak Kumar. **Yatharthavadi aur adhuniktavadi saundrya chintan ka talnatmak adhyayan.** Delhi.

9. Thakar Dass. **Hindi upanyason mein Panjab ka sanskritik-samajik parivesh.** Panjab.

Urdu

1. Kamal Ahmad. **Urdu as media: The language of radio and television.** JNU. Prof Mohammad Hasan, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

Bengali

1. Chattopadhyay, Krishnendu. **A study of the folk songs and other folklore materials of the Sabar Group of aboriginals of the Western Border of West Bengal in the back ground of their social life and lore.** Rabindra Bharati.

2. Sen, Sikha. **Bangla upanyas: Nagarik jiban; O-nagarik manush.** Rabindra Bharati.

Assamese

1. Bordoloi, Surendra Nath. **Contributions of the Assam Sahitya Sabha to the socio cultural life of Assam, 1917-85.** Dibrugarh. Dr Chandra Kataky, J B College, Jorhat.

Oriya

1. Panda, Bibhuti Bhusan. **Oriya short story and Surendra Mahanty.** Sambalpur. Dr B K Satapathy, Principal, N A C College, Burla.

Gujarati

1. Alaiya, J S, **Swatantrayottar geet rachnayon.** Saurashtra. Dr J C Dave.

Tamil

1. Sampath, R. **The influence of the literary movements on Tamil new poetry.** Pondicherry. Dr A Pandurangan, Prof and Head, Department of Tamil, Pondicherry University, Karaikal.

2. Selvaraju, N. **Erattai Kappiyangal kattum Tamilar samuthayam: Kudumbam mattum.** Pondicherry. Dr K P Aravaanan, Prof and Head, Department of Tamil, Pondicherry University, Pondicherry.

Malayalam

1. Madhavan Kutty T G. **A critical evaluation of Bhashanaishadham Campu in the light of Eastern and Western poetic concepts.** Kerala. Dr T Bhaskaran, Director, Sree Narayana Study Centre, University of Kerala, Kariavattom.

Telugu

1. Bagaiah, M. **Life and works of Kuchimanchi Timma kavi: A study.** Osmania.

2. Sreeranga Chary, A. **Annamacharyula sringar: Sankeertanalalo madhura bhakti.** Osmania.

3. Vidyavathy, K. **Vijayanagara sasanalu: Bhasha sanskritika sahityamsalu.** Osmania.

4. Suryanarayana Murthy, Koti. **A study of Dr Prasadaraya Kulapathy's literature.** Andhra.

Geography

1. Bhagabati, Abani Kumar. **Spatial analysis of small scale agriculture in Assam: A case study of Nalbari District.** Gauhati. Dr M M Das, Reader, Department of Geography, Gauhati University, Guwahati.

2. Borah, Harendra Nath. **Population of Siang Region: A geographical analysis.** Gauhati. Dr H N Sharma, Prof, Department of Geography, Gauhati University, Guwahati.

History

1. Annapurna, Akella Venkata Sai Jaya. **The role of Gandhian Ashrams in the Indian freedom struggle with special relevance to Andhra area.** Andhra.

2. Aryendra Singh. **Pracheen Bharat main antrarajya sambandh.** Gurukula. Dr B C Sinha, Prof, Department of Ancient Indian History, Culture and Archaeology, Gurukula Kangri Vishwavidyalaya, Hardwar.

3. George, Anies. **Western poligars in Madras Presidency.** Sambalpur. Dr P K Mishra, Prof, P G Department of History, Sambalpur University, Sambalpur.

4. Jayasree, Kambhampati. **Agrarian economy in Andhra under Vijayanagar.** Andhra.

5. Muniswamy, R. **Hoysala administration and state craft.** Bangalore. Dr K Veerathappa, 869-B, 17'G', 5th Block, Rajajinagar, Bangalore.

6. Roy, Ratna. **British relations with Cooch Behar State, 1772-1839.** NBU.

7. Satya Prasad, Parakala. **Temple and society in Andhradesa, 1000-1500: A social functional and socio-historical study.** Andhra.

8. Sharma, Krishan Gopal. **Historical and cultural gleanings from the early Jaina inscriptions from Rajasthan upto 1200 A D.** Rajasthan. Prof M S Jain, Ex Prof, Department of History, University of Rajasthan, Jaipur.

9. Sharma, Vinod Kumar. **Pracheen Bharat mein arthik sansthayen: Prarambh se Kushan kal tak.** Gurukula. Dr Kashmir Singh Bhind, Department of Ancient Indian History, Culture and Archaelogy, Gurukula Kangri Vishwavidyalaya, Hardwar.

10. Verma, Devinder Kumar. **Guru Gobind Singh in history.** Punjabi. Dr G S Nayar, Department of History, Punjabi University, Patiala and Dr Bhagat Singh, Department of Business Management, Punjabi University, Patiala.

EDUCATION NEWS INDEX

A list of select articles and editorials on Education from newspapers received in the AIU Library during November 1990.

EDUCATIONAL PHILOSOPHY

Gandhi, Jagdish. Education: A new approach. **The Assam Tribune** 1.11.90.

KNOWLEDGE INDUSTRY (Editorial). **The Tribune** 25.11.90.

Shamsuddin. Methods of moral education. **National Herald** 28.11.90.

EDUCATIONAL PSYCHOLOGY

Venkataraman, D. Peculiar learning and thinking styles. **The Hindu** 20.11.90.

EDUCATIONAL SOCIOLOGY

Ahmed, Soroor. Casteism hits Bihar education scene. **The Pioneer** 5.11.90.

Amrik Singh. Sociological factors involved. **Deccan Herald** 16.11.90.

Amrik Singh. Why Delhi burned longest in the Mandal fire. **Free Press Journal** 18.11.90.

Arunachalam, S. Stir against Mandal report. **Amrita Bazar Patrika** 8.11.90.

Basu, Soma and Dhar, Aarti. Fanning the flames? **The Hindu** 4.11.90.

Beteille, Andre. Social backwardness : Shifting norms and values. **The Times of India** 6.11.90.

Bhagwan Das, B. Reservations: A rejoinder to MIDS. **The Hindu** 20.11.90.

Devraj Singh. Mandal and sane policy. **Patriot** 6.11.90.

Dey, Bata K. Mandal report : Anacin no cure for diabetes. **The Hindustan Times** 9.11.90.

Ekbote, Gopal Rao. Mandal & after - II: No alternative to merit.**The Statesman** 29.11.90.

Ezekiel, Hannan. Reservation: Are right questions being asked? **The Economic Times** 26.11.90.

Ezekiel, Hanna. Reservation: How to make it more effective. **The Economic Times** 27.11.90.

Harbhajan Singh. Mandal Commission recommendations: Objections not tenable. **The Hindu** 6.11.90.

Joseph, T M. The Mandal recommendations : Who are the beneficiaries? **Deccan Herald** 2.11.90.

Kalyanaraman, A. It will only intensify animosities. **The Hindu** 6.11.90.

Kaul, T N. Tackle basic causes of backwardness. **Patriot** 20.11.90.

Krishna Kumar. Youth in despair. **The Hindustan Times** 13.11.90.

Krishnaswamy, E. How long will this distortion continue? **The Hindu** 6.11.90.

Mathur, S M. The Mandal "Backwards": A profile. **The Assam Tribune** 11.11.90.

Murthy, D B N. Reservation system a retrograde step. **The Pioneer** 7.11.90.

Puri, Rajinder. Reservations yes, Mandal no! **The Tribune 17.11.90.**

Radhakrishnan, P. Reply to Andre Beteille: Some issues overlooked. **The Hindu** 8.11.90.

Sanyal, Sunanda. Mandal & after - I: Youth as pawns in politics. **The Statesman** 28.11.90.

Sena, Vinod. Vandalising Mandal. **The Hindustan Times** 1.11.90.

Sharma, S P. Bifurcate the backwardness. **The Assam Tribune** 8.11.90.

Sharma, S P. Towards equitable social justice. **The Assam Tribune** 5.11.90.

Shastri, P D. Mandalism opens Pandora's box. **The Pioneer** 12.11.90.

Singh, N K. Why these self-immolations. **The Hindustan Times** 4.11.90.

Singh, Sampooran. Mandal report: Distortion of personality. **The Tribune** 25.11.90.

Vedantam, Vatsala. Reservations: For whose benefit? **Deccan**

Herald 11.11.90.

Venkata Rao, V. Reservations: Backgrounder. **The Assam Tribune** 27.11.90.

Venkata Rao, V. Reservations (2). **The Assam Tribune** 28.11.90.

Venkata Rao, V. Reservations: An overview. **The Assam Tribune** 29.11.90.

Venkateshwar Rao, Parsa. Mandal report: The Magic wand of politicians. **Indian Express** 7.11.90.

EDUCATIONAL POLICY & PLANNING

Mathur, V S. Child's right to education. **The Tribune** 18.11.90.

Roy, Ramashray. Whither education policy? **The Hindustan Times** 7.11.90.

EDUCATIONAL ADMINISTRATION

Amrik Singh. The future of Delhi varsity. **The Hindustan Times** 21.11.90.

Ansari, Iqbal A. Importance of 'value education'. **Free Press Journal** 16.11.90.

Bari, Marvel A. Quality, not experiment is the long felt need. **The Hindu** 13.11.90.

DOUBTFUL JUSTICE (Editorial). **Deccan Herald** 1.11.90.

PRE-UNIVERSITY COURSES (Editorial). **Deccan Herald** 24.11.90.

Qamar, Furqan. Relegating higher education. **The Hindustan Times** 16.11.90.

Swamy, Raju. HRD as part of institution building. **The Hindu** 13.11.90.

UNIVERSITY-INDUSTRY linkages (Editorial). **The Hindu** 26.11.90.

CURRICULUM

Jagannath, V and Shoba, J. Environmental study - a model. **The Hindu** 27.11.90.

LANGUAGE & LANGUAGE POLICY

Jebasingh, Ananthi. The language dilemma. **The Hindu** 27.11.90.

ROOM FOR languages (Editorial). **The Statesman** 5.11.90.

Sachdev, Archana. Language matters. **Indian Express** 3.11.90.

Shaik Mowla. Evolving methodology suited to needs. **The Hindu** 20.11.90.

SCIENCE EDUCATION

BIOGRAPHICAL ROUTE to creative science (Editorial). **The Hindu** 21.11.90.

Nehru, J L. The progress of science. **National Herald** 14.11.90.

VOCATIONAL EDUCATION

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Editor :
SUTINDER SINGH

My Mother Tongue is not my Mother's Tongue

Shivendra K.Verma*

This paper is organized in three parts. In part I an attempt has been made to present a brief summary of the popular and romantic notions about the mother tongue. Part II has its focus on the changing roles of the mother tongue and other tongue (s) in Singapore. In Part III it has been suggested that notions like 'mother tongue' 'first language' should be defined in functional terms.

I

People mean different things when they talk about their 'mother tongue'. These 'different things' can be examined on two parameters: personal and institutional. The term 'Personal' here covers one's sentiment-centred view of language and language-ordering or layering in terms of chronology and primacy in one's linguistic repertoire. It has been said again and again that 'mother tongue' is the first language acquired by the child. In Webster's Third New International Dictionary it has been defined as the language of one's mother: the language naturally acquired in infancy and childhood; one's first language'. The term 'Institutional' refers to the views regarding the mother tongue in Census papers and other official documents. The following is a brief listing of some of the views regarding 'mother tongue':

(a) Mother tongue is a language with which one is emotionally identified.

(b) It is the home language of the child.

(c) It is the language spoken from the cradle.

(d) "There is something unique about the 'mother tongue', 'the native language'. It is our 'own' language imbibed in early childhood, effortlessly as it seems, at least in retrospect." (Christophersen, 1973, p. 34).

(e) We may come to think of the mother tongue as something divine.

(f) To many there is something sacred about the mother tongue because it is part of the national heritage, and it is a sacred duty, they feel, to love and cherish this heritage.

(g) The mother tongue is the true vehicle of mother wit.

(h) The mother tongue is one with the air in which a man is born.

(i) A man's native speech is almost like his shadow inseparable from his personality.

(j) Conrad identifies mother tongue with 'first-learnt'language'.

(k) "One could say arbitrarily that any language learnt by the child before the age of instruction, from parents, from others, such as the nurse looking after it, or from other children, is an L_1." (Halliday, et al; 1968, p.78).

[Based on the paper presented at the XIV All India Conference of Linguists, Nagpur, 1985]

**Director, Central Institute of English & Foreign Languages, Hyderabad.*

(l) The mother tongue is characterised by the user's feeling of intimacy in relation to it, of being at home in it, of its being part of him as a person.

(m) The mother tongue is something unique which could never be equalled by any later-learnt language.

(n) "In general, 'native language equals L_1.'; that is, the majority of people have one native language which is, and remains throughout their lives, the one from which all their registers and restricted languages are drawn. A minority of people have more than one native language; and a minority – not the same minority – replaces the native language by a foreign language as their L_1. A few even acquire more than one language for all the purposes for which they use any language." (Halliday, et al, 1964, p. 224).

(o) "I must cling to my mother tongue as to my mother's breast, in spite of its shortcomings. It alone can give me the life-giving milk." (Gandhi, 1956, p. 201).

(p) "The mother tongue is taken here to mean the language which a group of people, considered to be the inhabitants of an area, acquire in their early years and which normally becomes their natural instrument of thought and communication."(Awoniyi, 1976, p. 27).

(q) "Mother tongue has generally been defined as the language spoken in the individual's home during his childhood or a near equivalent such as the language which the individual's parents spoke or which he first learnt to speak." (Nigam, 1972, p. xiii).

(r) In 1881 the definition of the term 'mother tongue' which was given to census enumerators in India was that it meant 'the language ordinarily spoken in the parental home of each person'. In 1891 also it was found advisable to retain the question for parent tongue and the instructions issued regarding the language were 'enter here the language ordinarily spoken in the household of the parents, whether it be that of the place of enumeration or not'. In 1901 the title of the column in which the information on language was collected was changed to 'language ordinarily used' and the corresponding instruction for the guidance of the enumerators was 'enter here the language which each person returned as that which he ordinarily uses.' (Nigam, 1972, p.xiv).

(s) In 1911... it was laid down that language to be returned was that which each person ordinarily spoke in his own home. In case of infants and deaf mutes language of the mother was to be entered... This definition of mother tongue.....has more or less remained unchanged through the subsequent censuses including the last two elaborate ones, i.e. 1961 and 1971. In 1961.... mother tongue was defined as language spoken in childhood by the person's mother to the person or mainly spoken in the household.... In 1971 the Census instructions were the following.....'. 'You are bound to record the language as returned by a person as his mother tongue and you should not enter into any argument with him and try to record anything other than i.e. return.' (Nigam, 1972, pp. xivxv).

(t) One may, for convenience, use the abbreviation 'L_1' for primary language, and 'L_2' for secondary language. L_1 is usually, but not always, the language first acquired in childhood; it is the language of its speaker's intimate everyday life; it is also to a large extent the language of counting and other forms of verbal self-stimulation, or 'thinking in words'. Most people–that is all except perhaps ambilinguals– have only one L_1, but they may have a number of L_2s, each perhaps reserved for one particular purpose, as for instance, reading scientific papers, enjoying a Mediterranean holiday, reading the scriptures. (Catford, 1959, pp 137-8)

An analysis of the views listed above reveals that opinions differ regarding the uniqueness of the mother tongue. A large number of people feel that it is their 'own' language, their parents' language, the language of their intimate everyday life, and the language learnt first from their mother. It is the language in which they think.

Now consider the following definitions of the mother tongue as the primary conveyor of man's primal feelings and emotions:

(i) The language which allows one to have the cognizance of the world is the mother tongue.

(ii) It is the language through which the child recognizes and organizes his experience and environment around him. It is the language used to express one's basic needs, ideas, thoughts, joys, sorrows and other feelings.

(iii) "Through its mother tongue the infant first learns to name things it sees or feels or tastes or hears, as well as the ties of kindred and the colours of good and evil. It is the mother tongue which gives to the adult mind the relief and illumination of utterance as it clutches after the aid of words, then new ideas or judgements spring from the wordless recesses of thought or feeling under the stimulus of physical experience or of emotions." (The Calcutta University Commission Report, 1917-19, pp. 56-57).

(iv) "The term was first used by Catholic monks to designate a particular language they used, instead of Latin, when speaking from the pulpit. No Indo-

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Germanic culture before had used the term. The word was introduced into Sanskrit in the eighteenth century as a translation from English." (Illich, 1981, p. 24).

(v) "The term mother tongue, from its very first use, instrumentalizes everyday language in the service of an institutional cause."(Illich, 1981, p. 28).

(vi) "...... it is true that for very many people, even those who regularly use more than one language, no language ever completely replaces the mother tongue. Certain kinds of ability seem to be particularly difficult to acquire in a second language. Among those, the following are perhaps most important in an educational context:

(i) Saying the same thing in different ways ....

(ii) Hesitating, and saying nothing very much .....

(iii) Predicting which the other person is going to say......

(iv) Adding new verbal skills (learning new words and new meanings) while talking and listening....." (Halliday, 1978, pp. 199-200).

We can go on piling up such definitions. We have a vast body of literature on 'mother tongue education', 'the changing role of the mother tongue in education', 'the use of the mother tongue in education' and similar topics but no attempt has been made to define the mother tongue in functional terms in bi/multilingual settings.

In multilingual and multidialectal societies socio-political ugs and pulls force individuals to decide what ought to be their mother tongue. This point will be discussed at some length in Part II. We will now examine the census figures to get some idea of the extralinguistic considerations prompting people to declare language 'X' or 'Y' or 'Z' as their mother tongue. There was no reference to the mother tongue in the Indian census of 1872, but a question on the mother tongue was asked in the censuses of 1881, 1931,1941, and 1951. Mother tongue was defined as 'the language spoken by the individual from the cradle'in the census of 1881. In the 1891 census the term was changed into 'parent-tongue' which was defined to mean the language spoken by the parents of the individual. It was replaced by 'language ordinarily used' in the 1901 census. It was further modified into 'language ordinarily spoken in the household' in the census of 1911....In 1921 the question was reduced to 'language ordinarily used! The term mother tongue was used in the censuses from 1931 to 1971.

In the 1961 census 2544 individuals scattered throughout the country declared Sanskrit as their mother tongue, though the real fact was that most of them used one of the major modern Indian languages as their effective first language. What individuals return as their mother tongue to census enumerators depends in a number of cases on socio-political factors such as: 'the language that you speak is a dialect: you shouldn't declare it as your mother tongue; 'language 'X' is the dominant language: it is the language of power and upward social mobility; you should declare it as your mother tongue'. The strong force of Hindi as the official language of the state in Bihar and its functional importance has prompted a number of tribes to abandon their language and shift to Hindi. It has been seen that some native speakers of Bhojpuri have given up Bhojpuri in favour of Hindi in a Delhi setting. In census enumerations a speaker returns a particular language as his mother tongue not on the basis of the formal properties of the language but on the basis of his group identity and loyalty and also under socio-economic pressures. This may be one of the main reasons why speakers of, what has been called, Bihari languages prefer to return Hindi as their mother tongue. There is another strong move in favour of one's own language. That is the reason why in the 1961 census a large number of Kharia 85, 162 (95,956), Munda 369,910(465,093) and Oraon 404,107 (564,774) tribes returned their native tribal languages as their mother tongues. But the real fact is that "the functions of these languages in major societal domains of use are replaced by a dominant language, which is the language of formal occasions, education, mass media and state-supported institutions. The situation is not that of total language shift but the dialectalisation of the mother tongue." (Mahapatra, 1985, p.10). Census data collected under the rubric of mother tongue in monolingual countries are not easily comparable with the data collected from multilingual countries. "In a monolingual country 'mother tongue' may simply reflect language usage, while in a multilingual country, 'mother tongue' is intimately related to the identity of the speaker. The question of mother tongue in a multilingual country is not of form but of function. (Pandit, p.14) 'The concept of 'mother tongue' is closely linked with the awareness of one's identity affiliations in the society. A declaration of mother tongue by an individual is primarily a conscious or sub-conscious judgement of identifying one's speech habits with others through a general term (conventionally stabilized or still in flux) as a sign of 'cohesion' or distinguishing them from others as a mark of 'distinction' ......The narrow interpretation holds it to be the home language of each child, which is accepted by the census authorities: 'the language of each child, spoken from the cradle-in the case of infants and deaf mutes is the mother tongue of the mother." (The Census of India, 1951, p.1).

II

We would now examine the question of the mother tongue in the multilingual, multiracial, and multicultural setting of Singapore. Singapore has recognized four major languages – Malay, Mandarin, Tamil and English as its official languages. Malay is the only language which has been listed as 'national language', but in the over all linguistic system it has only a 'ceremonial' role. English, a non-native language, has been given the functional status of a superordinate language of administration, education, trade, commerce, and international relations. It is both an intra- and international link language. It became the first school language for all children by 1987. Thus English has been assigned all the major roles in the national linguistic system network. This was predicted in the 1978 Report of the Ministry of Education. "The new education system which will evolve over the years will be one in which great prominence is attached to the English language at the cost of some reduction in standards in mother tongue, be it Mandarin, Malay or Tamil." (pp.1–7). It appears that mother tongue retention is likely to decrease as a result of a variety of social and economic factors. What is of great sociolinguistic significance is the transformation of a non-native language into an effective first school language. English, a powerful tool of Western culture, is being adopted to function as a tool of the cultural patterns of Singapore. English may be the language of growth, power and mobility, but it is Malay, Chinese, and Tamil that give people a sense of national identity and help them understand, interpret, and preserve their cultural heritage."(Based on Verma, 1981, pp 1 – 19).

The linguistic scene in Singapore gives us a new insight into the concepts of the mother tongue and L_1. It is clear now that socio-politico-economic pressures and the philosophy underlying the 'melting pot' can make your mother tongue your other tongue and your other tongue your mother tongue. According to the report in The Straits Times, 24 December 1983: "All pupils will be taught English as their first language by 1987. In this new 'national stream' mother tongue will be the second language."

We must subcategorize L_1 into Home L_1 and School L_1. Home L_1 of children may be Mandrain or Malay or Tamil but the effective language at school for the majority is English (and it will be English for all by 1987). This may eventually lead on to the taking over of the role of Home L_1 too by English.

From a close analysis of the news and views published in The Straits Times it appears that there are two movements underlying language choices in the Singaporean setting: forging an English based Singaporean culture and maintaining an effective link with Chinese, Malay, and Tamil Cultures. The second movement, supported by the government's bilingual policy, can and should be a healthy complement and not an optional and free adjunct to the first. These two movements together can help the government achieve its objective "to build a cohesive multiracial society with a national identity."(Goh Report, 1978,pp.2-2).

"The term 'bilingualism' and 'mother tongue' have distinct meaning in the Singapore context. The first refers to the study, not of any two official languages, but of English and a mother tongue. For a pupil of Chinese ethnic origin, Mandarin is decreed to be the mother tongue (though for a majority of the Chinese ethnic group the home language is Hokkien); for the Indian, Tamil; for the Malays, Malay. The term 'mother tongue' is thus used to indicate ethnic affiliation rather than the pupil's actual home language. It is possible too for pupils to learn a mother tongue that is not their own – it is estimated that some 40 per cent of pupils from Tamil-speaking homes have opted for Malay as their mother tongue." (Gopinathan, 1980, p.178 f.n.).

III

It appears from what has been said in Parts I and II that the answer to the question – 'What's your mother tongue? – depends on a number of complex socio-political and psychological factors. Consider the following :

(a) My mother's mother tongue is Bhojpuri.
My father's mother tongue is Bhojpuri.
My mother tongue is Hindi.

(b) My mother's mother tongue is Tamil.
My father's mother tongue is Bengali.
My mother tongue is English.

(c) My mother's mother tongue is Marathi.
My father's mother tongue is Tamil.
My mother tongue is Tamil.

(d) My mother's mother tongue is Hindi.
My father's mother tongue is Kannada.
My mother tongue is Hindi.

(e) My mother's mother tongue is Hindi.
My father's mother tongue is Hindi.
My mother tongue is English.

(f) My mother's mother tongue is Marathi.
My father's mother tongue is Marathi.
My mother tongue is Marathi.

These six models may be shown in a tabular form:

My mother's mother tongue	My father's mother tongue	My mother tongue
A	A	B
A	B	C
A	B	A
A	B	B
A	A	A

The point emerging out of the models given above is supported by the patterns of mother tongue adoption/maintenance and intergenerational mother tongue shifts in the Indian urban, multilingual settings. "Compared with the situation in many nations, a staggering number of immigrants and their descendants in the United States have given up their ancestral languages and shifted to a new mother tongue."(Lieberson, 1981,p.158) Pandit (1977) presents a contrast between the patterns of language shift and language maintenance in Western countries and those in India. "A second generation speaker in Europe and America gives up his native language in favour of the dominant language of the region: language shift is the norm and language maintenance an exception. In India language maintenance is the norm and shift an exception." Pandit's generalisation does not hold good in our rapidly expanding urban and industrialised societies where economic and political pressures and instrumental functions force people to adopt the dominant language as their effective first language. In fact, the picture of mother tongue maintenance and shift is nebulous. People carry their language and pattern of life along with them. They cling on to their mother tongue in private domains and intragroup interactions but use the dominant language of the area in all other domains (For example, Malayalam-speaking families working at Patna use Malayalam at home and also as an intragroup link language but switch to Hindi in other domains.) Domains provide a powerful tool for analysing language usage and language shift. Boys and girls of Bhojpuri and Awadhi-speaking families studying in Delhi tend to adopt Hindi as their effective mother tongue (Note that we are making a distinction between notional mother tongue and effective mother tongue). The situation is much more complex in cases of marriages across mother tongue lines. Either the boy adopts the girl's language or the girl adopts the boy's language or both adopt a third language as their link language. Children in such families tend to adopt the link language as their mother tongue.

An individual calls a particular language his mother tongue for one or more of the following reasons (Note that the reasons have been grouped into four classes):

I. (a) it is his/her mother's tongue
   (b) it is his/her father's tongue
   (c) he/she speaks to his mother in this language
   (d) he/she speaks to his father in this language
   (e) he/she speaks to his wife/her husband in his language
   (f) he/she speaks to his/her children in this language
   (g) he/she speaks to the members of his/her peer group in this language
   (h) he/she speaks to his/her fellow workers in this language.

II. (a) this is the language that he/she uses at home
   (b) this is the first language that he/she used for communicating with people around him/her
   (c) this is the language that he/she has acquired informally
   (d) this is the language that he/she uses most frequently
   (e) this is the language through which he/she imbibes his/her culture
   (f) this is the language which he/she feels is his/hers

III. (a) this is the language through which he/she has had his/her education
   (b) this is the language in which he/she reads local newspapers, magazines, literary texts and listens to radio and sees TV programmes
   (c) this is the language that he/she uses at his/her workplace
   (d) he/she reads his/her religious books in this language
   (e) he/she uses this language in his/her correspondence
   (f) he/she makes telephone calls in this language
   (g) he/she discusses local affairs in this language
   (h) he/she discusses national affairs in this language
   (i) he/she discusses religion in this language
   (j) he/she discusses health in this language

1V. (a) he/she prays in this language
   (b) he/she dreams in this language
   (c) he/she curses in this language
   (d) he/she counts in this language
   (e) he/she thinks in this language

To quote Christophersen, "what characterizes the mother tongue, the primary language as compared with a secondary language, is the user's feeling of intimacy in relation to it, of being at home in it, of its being part of him as a person."(Christophersen, 1973,p.59). A substantial number of persons use some other language as well as their mother tongue in speaking to their children, it suggests that the standard definition of the mother tongue, the language first learned in childhood, may be grossly inappropriate for some socio-linguistic settings. What is important here is not the principle of precedence in terms of learning (i.e. language first learnt is the mother tongue) but the principle of domain-determined use. If a person uses language 'A' in most of his personal and interpersonal domains, then language A is his effective mother tongue or L_1. Language examined from this point of view represents a network of relations functioning in a wider network called socio-politico-cultural network. Each term in this network represents a choice or a bundle of choices and has a contrastive value relative to the other terms in the network. (Verma, 1974, p.5). Languages in contact in a multilingual setting form a system network. Each language in this network represents a bundle of features and has a contrastive value based on the role (s) played and function(S) performed by it relative to the roles played and functions performed by other languages. It is on the basis of roles and functions that languages should be subcategorized into 'mother tongue' 'L_1';'L_2' and 'foreign language'. Manipuri, for example has the value of a foreign language in Tamilnadu and English (which is a non-native language) has the value of a second language. For students from Bhojpuri-belt studying at Allahabad University, Hindi is their effective L_1 and Bhojpuri is relegated to a very restricted set of 'home domains'. In the Singaporean linguistic system the 'slot' meant for the mother tongue has been given to what is known as 'the other tongue' and the 'slot' meant for second language has gone to the mother tongue. The mother tongue of the members of a speech community in a multilingual setting is that tongue which they use as an intragroup link language and the primary tool of their culture and feelings. The other languages in contact play either 'supplementary' or 'complementary' roles.

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17- B, Sri Aurobindo Marg, New Delhi- 110016

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COURTS AND THE CAMPUS

N.K. Jayakumar *

This regular feature is a Survey of important judicial decisions relating to education, reported during the previous month. It will appear in the third issue of every month.

A survey of cases relating to education reported in leading law reports during the recent years clearly reveals that questions connected with admission constitute the single largest category among the cases coming before the courts[1]. True to this trend, five out of the seven cases included in this Survey are related to admission.

In SKT Education Society v. State of Karnataka[2] decided by the Karnataka High Court, a government order enhancing the minimum qualification for admission to C.P.Ed. Course from SSLC to PUC was challenged as violative of Art.14 of the Constitution. Characterising this as a policy decision, the court observed that judicial wisdom commends non-interference with such decision unless it is repugnant to any constitutional provision or to any law. It was further stated that the Government should not demonstrate the basis for enhancement of the qualification or support the enhancement on a statistical basis to disprove arbitrariness.

The dispute in **Surabhi Rai v. State**[3] arose, probably because of a conflict between the University ordinance and a government notification. Here, the petitioner did not appear in two subjects and failed in two other subjects in the second MBBS examination. She appeared in those subjects in the supplementary examination and passed. Subsequently she passed the MBBS examination and was registered as a qualified doctor with the Medical Council. When she had applied for a house job, in response to an advertisement, in the Motilal Nehru Medical College, Allahabad, her rank was determined excluding the marks obtained by her in day to day performance in the first examination in the subjects in which she had failed. Instead of that the marks obtained in day to day performance in the second/supplementary examination were added. A representation by the candidate was rejected by the authorities on the ground that according to the Ordinances and the practice prevailing, the marks obtained in day to day performance in the examination in which a candidate was declared passed would be counted for calculating the merit index. But this was contrary to a direction in a government notification issued under S.28 of the State Universities Act, 1973[4]. The Allahabad High Court held the decision absolutely unjustified and directed the authorities to rank the petitioner after preparing the merit index as directed by the government notification. Another question which was incidentally raised in the case, viz. whether a candidate who has not appeared in an examination can be treated to have failed in the examination, was not decided by the Court.

An order issued by the U.P.Government stipulated that only those students who had got admission to M.B.B.S. through C.P.M.T. examination conducted by State Government would be eligible for admission to P.G.Courses. It was further provided that those students who had been transferred from one Medical College to another within the State would be treated as students of the College from where they had completed the last two professional examinations. The petitioner in **Lavelina Chawla v. State of U.P.**[5] challenged the validity of the above order as discriminatory. Upholding the validity of the order, the Allahabad High Court observed that postgraduate education in professional courses must be of high academic standard, and if any state adheres to its own standard and allows P.G. studies for only those who had crossed the ordeal by securing admission through the examination conducted by it, it cannot be said that it has differentially treated two classes of persons. But the petitioner in the case was able to obtain relief from the court, because the Court pointed out that while admitting the petitioner her attention was not drawn to the bar provided in the Government Order. She was allowed to complete the course, participate in the test for admission to P.G.Course and ranked. The Court, therefore, issued direction to the authorities to admit the petitioner.

Ambitious students, prompted by a keen desire to prosecute professional studies, are lured by unscrupulous persons running unauthorised institutions or conducting unauthorised courses. Ultimately when the innocent student realises that he has been cheated, he rushes to the Court seeking a remedy. In many such cases the courts may also be helpless. But when the fault lies with the authorities and remedial action is possible, the courts must come to the rescue of the students, overruling technical objections raised by the authorities. The reluctance of a Single Judge to do so was corrected by the Division Bench of the Madras High Court in **V.Sadayappan v. Director General of Health Services**[6]. Here the appellant was allotted a seat for undergoing P.G.medical course in a recognised college by the

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**Head of the Department of Law, University of Kerala, Thiruvananthapuram.*

Director General of Health Services. After joining the course he came to know that the course was not recognised by the Indian Medical Council. His request to reallot him to another recognised institution was turned down by the authorities on the ground that he had given first preference to the said college. The aggrieved student approached the High Court, to be told by a Single Bench that he did not deserve any remedy. Reversing that decision, the Division Bench held that allotment of a candidate to an unrecognised course was a gross irregularity committed by the authorities. In the prospectus they ought to have clearly indicated as to which are the recognised colleges and which are the recognised courses, which they failed to do. If, in spite of such indication, an applicant chooses to join an unrecognised college/course, the plea of the authority could be sustained. Here the situation was different and the respondents were directed to allot the appellant to a college which conducts recognised course.

The existence of several power centres, often with overlapping and conflicting powers, generates many problems in the field of professional education. Under the provisions of the pharmacy Act, 1948 the pharmacy Council of India is the competent authority to approve colleges conducting pharmacy courses. The question whether the State Government was competent to issue directions regulating admission to a pharmacy College, which has been approved by the pharmacy Council, was raised in **Daulat Ram Charitable Trust v. State Board of Technical Education**[7]. Here the State government wanted to centralise admission to the course and issued a warning that students admitted directly at any institution would be doing so at their own risk and examination of such students would not be conducted by the Board as such students would not be registered and allowed to appear at the examination conducted by the Board. The Punjab and Haryana High Court held that the government could not control admission of students by an institution which has been approved by the Council, under the garb of Affiliation Rules. It was also held that the All India Council for Technical Education Act, 1987 applied only to new technical institutions and not to institutions which have already been approved under the pharmacy Act. Another argument raised on behalf of the State that when there were no rules, the government could frame rules under the executive powers under Article 162 of the Constitution was not held applicable to the present case, since the institution was not receiving aid of any kind from the government. It was laid down that admission to such an institution could not be controlled by the Board or the State government. It is submitted that the court should have struck down the government direction on the sole ground of lack of competence under the relevant Acts without laying down a broad proposition that unaided institutions are beyond the reach of government control. It may lead to all sorts of unethical practices by unscrupulous persons running 'teaching shops' and pose grave threats to maintenance of academic standards.

Though the principles of natural justice have been held to be applicable in the case of decisions affecting the rights of individuals, authorities are still inclined to give a go-by to the cherished norms of fairplay. When the recognition of a college was cancelled by government without a proper enquiry and without giving an opportunity to the management, the order was struck down by the Orissa High Court in **Governing Body, Korua Women's College v. State of Orissa**[8]. There was no provision in the Orissa Higher Secondary Education Act and the Higher Secondary Education Regulations empowering the Council on Higher Secondary Education either to withdraw or cancel recognition already granted by it. The court was prepared to infer such a power in the case of an institution which failed to comply with conditions imposed by the Council or did something contrary to the Regulations. But the court emphatically laid down that in such an event the principles of natural justice demand that the management is to be told specifically about the allegations or infractions committed by it and is to be given an opportunity of having its say regarding the said allegations. The court pointed out that there was no provision in the Regulations specifically prohibiting the application of natural justice, and from the order of recognition flows several civil rights which concern not only the management but also the students.

When a person did not take any advantage of the opportunity afforded to him, he cannot later allege a violation of natural justice. The facts in **P. Umesh Rao v. Bangalore University**[9]. show that in an enquiry against a student for alleged malpractice, he merely denied the charge and stated that his answer script was taken by a student sitting next to him without his knowledge. He was invited to offer defence in writing and also given an opportunity for personal hearing by the enquiry committee, but he did not make use of the opportunity. Subsequently when he was debarred from appearing for two more examinations, the order was challenged as violative of natural justice. The Karnataka High Court, not finding any merits in the contention of the petitioner, rightly rejected the petition.

NOTES AND REFERENCES

1. See, Annual Survey of Indian Law (Indian Law Institute, New Delhi) for the years 1985 to '89.
2. A I R 1990 NOC 150 (Kant.)
3. A I R 1990 All. 166
4. According to C1.(2) of the notification, in the case of a candidate who fails in a subject and is declared successful in second or subsequent attempt in that subject, the marks obtained by him for day to day performance in the first examination in that subject shall be added to his total marks while preparing the merit index.
5. A I R 1990 All. 179
6. A I R 1990 Mad. 302.
7. A I R 1990 P&H 292
8. A I R 1990 NOC 144 (Ori.)
9. A I R 1990 NOC 151 (Kant.)

How Deepening is the Financial Crisis?

M.M. Ansari*

AZAD, J.L. Higher Education in India : The Deepening Financial Crisis. New Delhi, Radiant Publishers, 1988, pp. xvi + 257, Rs.75 (Hard bound)

India has the third largest system of higher education and one of the lowest per capita income in the world. A major problem which the decision makers confront today is as to how to provide financial sustenance for the system. This is especially because (i) a large section of population (about two-thirds) is yet to be covered under the educational network of programmes so as to provide elementary education, to which the Constitution of India has already committed; (ii) in terms of the quality and relevance of educational programmes, the conventional system of higher education has not yielded the desirable results as is reflected from the growing number of "unemployable graduates; (iii) more than three-fourths of the beneficiary groups of higher education are drawn from the top one-fourth higher income group, which indicates inegalitarian character of the system; and (iv) a heavy subsidization of higher education by the state have come into sharp criticism especially on the grounds of both social justice and economic efficiency.

As the resources are always limited and the developing countries like India have to concentrate more on programmes having direct bearing on alleviation of poverty-nutritional, health and functional literacy, the decision for allocation of funds for general higher education should be based on the objective assessment of the manpower needs of the society. The studies in economics of education demonstrate that the relative rates of return to investments on higher education vis-a-vis elementary and vocational education are lower. There is therefore need for a careful evaluation of the usefulness of the research findings, from which the recommendations for accelerated level of allocation of funds have emanated. In most cases the recommendations for higher level of allocation of resources have been made without making an objective assessment of (i) as to how the existing resources; which are so scarce, are being utilized[1]; and (ii) the qualitative and quantitative aspects of manpower requirements of the society in general and the industry group in particular. The book under review is no exception.

The last two decades bear a fairly good testimony of Azad's research contributions to the literature on Indian university finances. His works have largely focussed on highlighting fallacies in the resource allocation policy of the central and the state governments for financing the development of higher education. The book under review is his recent contribution to the existing literature on university finances which attempts to shed light on the nature of financial deficiencies which cause major impediments in successful execution of programmes relating to higher education and research. In his own words, "the book attempts to present an analysis of the various facets of financing higher education at the state as well as the institutional levels in order to delve deep into the intricacies of the financial mechanism, its incongruencies, inconsistencies and inbuilt inadequacies". The states of Haryana, Gujarat, Andhra Pradesh and Orissa, one each from Indian geographic regions, form the basis of analysis.

As regards methodology of analysis, a well structured questionnaire was circulated among a large number of colleges of the states with a view to eliciting views on various issues relating to college finances. Since the colleges of Haryana and Orissa did not adequately respond, the study, it can be said, is largely based on the information furnished by the colleges of Andhra Pradesh and Gujarat that generally cater to the needs of general higher education. While commenting on the sample size, the author is very sore on unhelpful attitude of officials whose poor response had greatly restricted the sample size of the study. He observes that "obtaining relevant information from educational institutions and the directorates of education is the most frustrating experience" of his life. In spite of such major limitations as inadequate and poor quality of data, he has made a number of vital observations which we shall review below:

**Joint Director (Research), Economics of Education Unit, Association of Indian Universities, New Delhi.*

The book is divided into two parts. Part I consists of six chapters which deal with macro level financial scene of colleges and universities. In Part II, of the four chapters, one each has been devoted to discuss the problems of individual states of Andhra Pradesh, Gujarat, Assam and Orissa.

Chapter 2 presents an overview of educational finances and makes a perceptive analysis of the nature of deficiencies from which Indian education system have been suffering. The notable shortcomings are: the relative level of expenditure in India is lower than other countries including developing ones, the phenomenon of rise in prices has eroded the resource base of education sector; the patterns of growth of expenditure and enrolment are inconsistent and bear no deterministic relationship; allocation of financial resources is inadequate as most of the primary and secondary schools lack infrastructural facilities and almost two out of five universities suffer from perpetual budgetary deficits; the proportion of plan expenditure to the total expenditure has substantially declined over the plan periods; and the contributions of the Centre to the overall educational outlays have declined.

On the basis of these observations Azad concludes that 'in spite of the sizeable inputs in education over the years, the expenditure is not adequate to meet the evergrowing requirements of education'. In the context of higher education, he states that 'its honeymoon period, which it consistently enjoyed upto the Fourth Five Year Plan in terms of allotment of resources, is decisively over'. A major reason is that 'the concern for equalization of educational opportunity will dominate the decision making and therefore it is unlikely that the higher education will be able to regain its position of pre-eminence in the allotment of resources'. This may be true, more so because 'even the none-too-adequate resources made available for educational development do not tend to be utilized fully. These observations relating to both inadequency of allocation of funds on the one hand and non-utilization of resources on the other create more confusion than clarify the issues in educational finances particularly for tertiary level of education. One would expect that the limited resources should be intensively utilized by the sectors like education, the requirements of which are undoubtedly very high, lest the lack of proper use of funds should lead to further cuts in budgetary allocations. This is an area which, as a follow up work of Azad's analysis need to be thoroughly examined with a view to developing a sound perspective on educational finance.

The fact is that while a large number of institutions of all types and levels suffer from inadequancy of facilities, the quality and quantity of teaching and research is not upto the expected level even among the institutions which have a relatively high and comparable level of facilities including teachers and student support services. For instance, can we say that the standards of teaching in specific disciplines or in general are comparable among the respective group of institutions like the IITs or the central universities or the state universities of a state which are treated somewhat uniformly in respect of finances by the single authority namely the central government, UGC and the state government respectively. The criteria for being eligible for grants in aid for all the colleges affiliated to Delhi University are almost the same, but why do we find so much difference in the quality of teaching among these colleges? Such a phenomenon is observable among the primary and secondary schools as well which are under private management. The point we wish to raise here is that it is not always the abundance of finances which provide panacea to the problems like low quantity or poor quality of education. What is even more important is as to how we use and administer both the physical and financial resources. Given the low stage of economic development of the country and, more importantly, from the knowledge of what is happening in the university campuses, it can be said that Indian education system is still suffering from 'colonial work ethic'and, as a result, the crucial matter like pursuit of knowledge is hardly taken seriously by the functionaries of the system. What is more dangerous is the potential of the disease to germinate the other socio-economic system of the country. It is this aspect which need to be looked into more carefully rather than arguing for more and more resources which would never be available in desirable quantity and, if they are made available by burdening future generations through internal and external debts, it would never be optimally utilized; unless, of course,the mechanism of ensuring financial accountability of the system is substantially improved.

Chapter 3 is devoted to the discussions on the extent to which the states contribute to the total educational expenditure and the pattern of utilization of expenditure by the universities and colleges. Azad's study shows that while there are considerable variations in the proportion of expenditure financed by the states, the universities and colleges are largely dependent on the government. The share of revenues from private sources like tuition fees, endowment, donations,etc.,in the total revenues also varies a great deal among the states and has recorded a downward trend over the years. A major proportion of total expenditure, about 60 per cent for universities and 80 per cent for colleges, is accounted for by the salaries of the staff, while the remaining share of expenditure is incurred on non-salary items. On this basis, the author concludes that the "declining trend in non-salary expenditure is indicative of the slow progress in modernization and the introduction of high-tech equipment and, therefore, the low quality of education". Another important observation is that increasing financial dependence of universities on government is likely to lead to serious infringement of the university autonomy. It has however been argued that the dependence has increased because the general public is not coming forward to contribute to the maintenance of institutions though "the private bodies have been exhibiting an insatiable desire to set up educational institutions regardless of academic justification." These observations are indeed commendable and indicate the areas which need to be examined by the financial analysts of the educational institutions.

Some of the related issues which have however not been dealt with by the author may be raised at this stage. In the context of the state universities and the colleges affiliated to them, which essentially form the subject matter of analysis in the book, under review, the following observations may be made. First, non-governmental contributions are as high as 30 to 40 per cent of the total university and college expenditure, while this ratio for the central universities is merely 10 to 15 per cent or even less. As compared to other countries including the developed ones, the level of private contributions by way of different fees, donations etc., are reasonably very high. This is true for the state universities and colleges which enrol nearly three- fourths of the total enrolments in the university system in India. Given the low level of per capita national income, it would seem unrealistic to expect higher private contributions except through rationalization of fee structure on equity grounds. Second, a high and rising ratio of expenditure on salaries should not be surprising for the fact that education sector everywhere is a highly labour intensive which involves huge payments of salaries to the staff. Moreover, while the salaries are indexed with the rise in prices, the expenditure on consumable items, like the chemical materials used in labs, furniture, maintenance of building, etc. are hardly linked with the rise in prices which cause a relative decline in the expenditure on non-salary items. For gaining an insight into the pattern of utilization of resources, it would have been interesting if the author had attempted to present a detailed break up of expenditure on the salaries of teaching and non-teaching staff, equipment, furniture, library, etc. to show whether or not the patterns of allocation of funds are in the desirable directions. 1) We believe that in studying the costs and finance aspects of universities, such analyses are inescapable as, like any other public sector enterprise, there is considerable mismanagement of physical and financial resources in educational institutions, which a developing country like India can hardly afford. 2) This is more so because the reviewer has demonstrated elswhere that non-academic expenditure is very high and rising, which ought to be checked. 3) The axiom that 'one who pays, calls for the tune' is seemingly the basis for the author's argument that there is inverse relationship between the financial dependence and university autonomy. The author's plea for raising private contributions so as to minimise the dependence on the government and thereby ensuring non-interference in the functioning of universities by the government, is not borne out by facts. While most of the universities are heavily dependent on the states, all of the states however do not interfere as much as the state of Bihar does especially by way of mass dismissal of Vice Chancellors. When the central and the state universities are compared, the latter are somewhat less dependent on the government than the former, Yet the central universities including IITs enjoy much more autonomy than the state universities. In India, more or less of university autonomy cannot be attributed merely to the extent of funding by the non-government sources. The experiences show that the judicial courts have been interfering more than any other agency in respect of admissions, examination results and recruitment of staff, and many a time, their interferences are not without a basis. The question of autonomy is closely related to the perception of the government about the role of universities in development and universities must strive to improve their credibilities, for more of autonomy by way of improving the performance in teaching and research within the constraints, autonomy has to be earned from the steady improvements in accountability of the system. There are numerous cases where the governments, after having made the financial allocations to the universities have not bothered as to how the money has been utilized. The question however is whether the universities as service agencies have come up to the expectations of the society in fulfilling its needs and utilized the funds properly for the purposes these were earmarked? In our socio- economic and cultural settings, which are characterised by considerable disparities, the government should be mainly responsible for providing essential services like education, lest the social and income inequalities should get aggravated. In such circumstances it is imperative for the government to adopt such fiscal instruments as are necessary for ensuring equity and efficiency in collection as well as distribution of resources.[2] But, it should refrain from 'Bihar type' interferences.

The financial assistance provided by the UGC is discussed in Chapter 4. The author has rightly stated that because of the delays in assessment of financial needs and allocation of funds, implementation of plan schemes is adversely affected. There are wide disparities in allocation of funds in terms of per student to the central and the state universities and also across the states. The relevant data are shown in Tables 4.1

through 4.3 of the book. The conclusion that emerges is that the UGC's grants are inequitous, both in relation to the states as also to institutions.

The second part of this chapter briefly discusses the financial support for research by various bodies namely ICSSR, ICAR and UGC. In the overall discussion on university finances, the abrupt appearance of quotations from the Review Committees of the above bodies digress the focus of reader from the issue of UGC's resource distribution policy to that of the issues and challenges faced by the above national institutions. In this chapter at least two gross omissions are noticeable. One relates to per student allocation of UGC's assistance and another relates to the policy of research funding. While showing per student UGC grants, care should have been taken to use enrolments data of the institutions to which data on UGC's assistance correspond. The enrolment data represent all the universities and colleges while many of them are not eligible for UGC grants as they do not satisfy the criteria laid down by the latter. In calculalting per student UGC assistance, it is seemingly assumed that the university system and the mechanism of funding is uniform throughout the country and that the nature and level of enrolments in all institutions are comparable which, in fact, is not so. A brief background should have been provided especially for the foreign readers to the effect that while central universities are fully funded by the UGC, the state universities and colleges receive merely plan grants generally on matching basis and, in some cases, on 100 per cent basis for a specific period and purpose. Also, the loads of graduate/postgraduate and research students considerably vary across the institutions. Moreover the treatment given to the deemed to be universities is even more diverse since some of them are treated in the same way as the central universities for some specific period whereas others are treated on the lines of the state universities. Such complexities in financing university system in India, as above, make a lot of difference when the per student expenditure vis-a-vis UGC's assistance are analysed and compared for drawing a meaningful conclusion. As regards funding of research, the author points out that a vast sector of higher education represented by colleges has hardly received research grants. It would indeed be interesting to explore whether such a situation has emerged due to inequitous policy of the financiers or the inability of recipient teachers in the colleges. It is common knowledge that the infrastructure for research in many universities and colleges is very poor which is attributable to both the lack of funds and also the inability of teachers to attract research funds from various national agencies like ICSSR, CSIR, UGC, ICAR, DST, etc. The author could have highlighted these aspects as well.

The patterns and procedures of grants by the central and state governments are discussed in Chapters 5 and 6 respectively. The criteria for receiving grants from both the UGC and the states have been critically examined and a number of suggestions made with a view to raising the allocation of funds for further development of universities and colleges. While the author's analysis hold the central and the state governments responsible for the growing financial crisis from which the universities and colleges are suffering, the latter are equally responsible as is revealed from the following observations made by the author: "In a country of the size of India, with its diverse socio- economic and political milieu, even massive inputs of financial resources fail to make the desired impact", because "any reform suggested by an outside organisation, however well intended it may be, takes a very long time to be accepted and absorbed into the system". The author has made a number of valuable suggestions for bringing about desirable reforms. A notable suggestion is that "unless the entire expenditure of the university institutions is thoroughly reviewed and the dead weight is removed, the financial problem of the universities will not ease". There is however no discussion on the 'dead weight' and the ways and means of removing it.

A wide range of issues is discussed, in Chapter 7, from the point of view of drawing relevant conclusions for policy formulation. At the outset the author has expressed the view that for arresting the degradation of quality of higher education, admissions to various courses should be so regulated that the students who have demonstrated their ability to learn should alone be admitted to the institutions of higher learning while others having poor educational performance should be absorbed by the economy in general activities relating to development. The notional linkages between degrees and jobs and the consequent enrolment pressure are greatly responsible for diluting the standards of education, There is therefore an urgent need to delink degrees from jobs, which, in pursuance of the National Policy on Education 1986, would reduce the number of aspirants for enrolment, thereby enhancing the quality of education. In this context, he has emphasised the need to promote distance education system which has strong potentiality to equalize educational opportunity and absorb growing number of students who seek higher degrees. While referring to the resource allocation policies of the centre and the states, he has argued that the existing imbalances in the levels of development of the institutions should be minimised by adopting a rational method whereby higher allocation to the institutions, especially the colleges, could be made to improve the level of facilities. Some of the interrelated aspects like principle of grants, block Vs earmarked grants, salary grants, time lag in making an institution eligible for grants, etc., have also been briefly discussed. While much of the discussions throughout the book revolve around the theme of making a case for increasing the magnitude of funds for higher education, the author has however confessed that due to low stage of economic development and a relatively higher priority for elementary education, the possibility of adequate resources being allocated for the promotion of educational programmes in the foreseeable future is ruled out. He has therefore argued that the alternative sources of financing educational programmes should be harnessed especially from two main sources, namely, private philanthropy and student fees in order to meet the ever-rising needs of education. He has however cautioned that the facilities that have been created ought to be utilized optimally so as to justify the need for additional revenue mobilisation by the educational institutions.

At this stage, a few comments may be made. First, the argument, as advanced by the author that the number of aspirants of higher education should be reduced since the 'quality has been fighting a losing battle with quantity', is not borne out by evidence for a large number of institutions. Neither the students are homogeneous groups in terms of learning abilities nor the facilities and standards of teaching are uniform in all the institutions. It is therefore difficult to say that the number of students is directly and inversely related to the quality of education There are institutions which have one of the lowest student-teacher ratios and have a reasonable level of infrastructure facilities, as compared, of course, to other institutions, yet the student achievements are not as high as might be expected of them. This may be attributable to a number of factors like the attitude of students and teachers in respect of educational pursuits, environment for studies, the quality and relevance of course contents, use of educational technologies for improving the effectiveness of teaching etc., which affect the quality of education. It is common knowledge that with the increase in the threshold of elementary and secondary level of education, the merit for admission test in the technical and professional fields as well as in humanities and social sciences has gradually gone up. Given the minimum level of inputs for teaching and learning, a higher level of students' achievement or quality of education can be expected from a large quantity or number of students. This is mainly because unlike the outputs of manufacturing industries wherein the inputs are standardised and/or homogeneous, which, in effect, lead to the production of uniform quality of outputs, in educational institutions the inputs like students, teachers and student support services are hardly of uniform standard. It causes therefore not only variations in the quality of outputs i.e. students but also keeps the threshold of achievement at a low level. Moreover, in countries with democratic polity it is not possible to pursue the objective of human resource development by concentrating on a few select number of students, howsoever the criterion of selecting for quality reasons is sound, without giving due regard to the equity consideration . What is being suggested here is that in the context of improving the quality of education the present number of students in higher educational institutions should not be regarded as a necessary evil for two reasons: One, the proportion of age-specific students in higher education is as low as 6 per cent and the quality of teaching could be considerably improved by optimising the services of the existing teachers in the system since the average teacher-student ratio being 1:20 for all India and 1:10 for universities alone is extremely favourable; and two, the quality of education thrives on the quantitative base provided, of course, that the conditions for learning are duly satisfied.

Even if the author's argument that quantity has dampened the quality of education is accepted on the presumption that the services of teachers and infrastructural facilities are optimally exploited, his suggestion to promote distance education would probably provide no solution to the problem of declining standards for the following reasons. Most of the distance learning institutions are enroling those who are not admitted in the regular colleges due to the lower scores of marks and they are offering almost comparable programmes of education. While the costs of education in such institutions is low and is largely self financing, the quality of education is also very poor. In brief, the programmes of distance education are cost-efficient but not cost-effective. This is duly borne out by the facts discussed elsewhere by the reviewer[3].

As regards his suggestion for mobilisation of resources from private philonthorpy and student fees is concerned, it may be mentioned that even though this is a laudable suggestion and almost every writer on the subject has underscored the need for taping resources from the above sources, there are certain practical limitations and the world-wide experience has shown very poor prospects of raising resources from these sources for the following reasons: First, Philanthropic contributions are largely attracted by the schools/colleges run by the private educational trusts and societies which make relatively more efforts in this direction than the government institutions. Moreover, in a developing country like India there are limits to which revenues from such sources including fees can be mobilised due to income constraints. Second, direct taxation policy is not suitably structured to provide incentives for tax payers– individuals as well as corporations– to donate an increasing amount of their incomes to educational institutions. This, therefore, calls for both encouraging tax payers by creating relevant provisions in the tax laws for donations to educational institutions as well as for making special efforts particularly by the institutions to attract funds by improving the standards of educational services to the society.

The question of raising fees including user's charges needs careful consideration mainly for two reasons. One, the beneficiaries of higher education ought to pay according to their economic abilities and the expected life time earnings; and two, the extent of government subsidisation of education should be rationalized so that the benefits of subsidy are somewhat equally distributed across the student community, irrespective of their enrolment in different types of institutions of higher learning. It has been observed that in relation to the total costs (per student) subsidy is high in the Institutions of National Importance like IITs and medical institutions and central universities while the same is much lower in the state universities and the institutions for distance education. There is therefore a strong case for rationalising the fee structure for the reasons of both raising the revenues of the institutions as well as equalising the benefits of subsidised educational services among a cross section of people.

There are however limits to which revenues from private philonthropy and upward revision of fees can be mobilised. In view of the increasing costs of education, new avenues should be explored with a view to meeting the additional expenditure requirements. In this context, educational institutions should make vigorous efforts to augment funds from industries and other business houses which are the major beneficiaries of university outputs. The forms and the extent of financial collaboration between the institutions and industries for running the programmes related to education, training and research should be worked out such that they are mutually beneficial[4]. These aspects have, however not been discussed in the book under review.

In part two of the book, the chapters 8 to 11 are devoted to a detailed discussion on educational finances in respect of the states of Andhra Pradesh, Gujarat, Haryana and Orissa respectively. The opinions of the principals of colleges collected through a well designed questionnaire are analysed in these chapters. While a number of important observations have been made which are mainly qualitative in nature, one would expect that the cause and effect relationship should have been thoroughly examined especially in quantitative terms which is possible by employing the statistical methods Given the limitations of such methods, it is feasible to quantify the extent to which policy interventions are required. In the regime of competing claims of various sectors of the economy for the limited resources, it is imperative that the focus of research on economics of higher education should concentrate on quantification of resource requirements keeping especially in view the manpower needs and the set of other objectives that are to be achieved. This is important more so because the discussions on college finances, as presented in the book under review, give no idea about the status of colleges or more specifically, the proportion of viable and 'nonviable colleges'. In case, many of them are in the latter category or provide general education rather than technical and professional degrees/diplomas, the recommendations for higher allocation should be carefully examined. While a commendable job has been done in analysing the views of the principals of the colleges of the four States, it is of interest to note that there is considerable convergence of the views of the principals from various States. The broad method of financing college education and the pattern of utilization of funds are largely consistent with the income and expenditure patterns of educational institutions at the national level. For the general reader, it would have been a help if the author had presented a comparative picture of the four states so as to distinguish the relevant and important features of educational finances and its management among the different states. As the entire analysis is based on qualitative statements, it becomes difficult to assess the relative strength and weakness of the system of higher education in the four states.

On the whole, this work of the author is a significant contribution to the literature on Indian educational finance especially in respect of the college finances. A number of issues especially relating to mobilisation of funds for college have been raised. These must receive the attention of the researchers on the subject in their future research so as to clarify the issues. The students, teachers and the policy makers would greatly profit from reading the book.

NOTES AND REFERENCES

1. For a detailed discussion on pattern of utilization of funds, see reviewer's 'Trends in Edcational Expenditure Among the Central and the State Universities', AIU 1990.
2. see reviewer's 'Assessing the Extent of use of Educational Infrastructure in the University Sector', **Journal of Higher Education** Vol.15, 1990.
3. see reviewer's 'Economics of Distance Higher Education' **The Concept Publishing Company** (forthcoming).
4. see AIU's study on 'University Industry Interaction : Exploring Areas and Forms of Collaboration, 1990.

THE KNOWLEDGE REVOLUTION

Hon'ble Shri Chintamani Panigrahi, Governor of Manipur and the Chancellor of the Manipur University delivered the convocation address at the 6th Annual Convocation and the Special Convocation of the University. He said "In this 'nuclear age' we live in a world, where information and knowledge become obsolete every three and half years. A computer generation is now three and a half years, that is, within every $3^{1}/_{2}$ years our knowledge doubles. Therefore, we must understand that what is important today is not what we learn but rather, how we develop the capacity to learn." Excerpts

Mankind has travelled a long way from a nomadic to pastoral, from a pastoral to an agricultural, from an agricultural to an industrial and from an industrial to a post-industrial civilization and now to a 'nuclear age'.

One of the greatest thinkers of the world Karl Marx had said that change is the only thing which does not change. And as the world is moving towards the 21st century, the only thing that one can be sure of is that more and more changes will come. The changes that will come in the next 10 years will surpass the changes that took place in the last one million years of human civilization.

CONVOCATION

Thus, today there is both a striving and a search for a sound philosophy that can sustain the human race in this 'nuclear age'. In this 'nuclear age' we live in a world, where information and knowledge become obsolete every three and half years. A computer generation is now three and a half years, that is, within every $3^{1}/_{2}$ years our knowledge doubles. Therefore, we must understand that what is important today is not what we learn but rather, how we develop the capacity to learn. Mental development creates receptivity to learn. Mental development creates receptivity and sharpness of perception in order to absorb and assimilate new ideas for remaining relevant to the times. It is for this reason that the youths of today are now participating in an adventure of unparalleled dimensions.

George Bernard Shaw once remarked, "youth is a wonderful thing. What a pity that it is wasted on the young". What he meant was that when we are young, we do not realise our capacities and dimensions. By the time we realise it, precious youth generally passes by.

Education helps us in acquiring knowledge. Deciding to use knowledge for a good purpose is wisdom. Information needs to be digested to become knowledge and knowledge should mature into wisdom. And as Professor A.N.Whitehead said, "unapplied knowledge is knowledge shorn of its meaning".

The search for a sound philosophy that can sustain the human race in this 'nuclear age' was manifested in the winter of discontent that swayed over Europe and the Soviet Union. In a historic speech delivered by President Gorbachev some months ago, he used the word 'spiritual' 17 times saying that "spirituality is what is missing to-day".

With all the advances in science and technology, there is more conflict and greater misery because spirituality was missing. In pursuit of its new policy, recently Soviet Union has invited Shri Ramakrishna Mission to open its branches there.

On 23rd February, 1896, Swami Vivekananda delivered a lecture on the theme "My Master". He gave a clarion call to the youth of the world saying:"Stand up and strike : The very sight of you will fill the worldly-mind, the wealth-seeking mind, with terror. Words never do anything, preaching has been all in vain. Every moment, prompted by the thirst for wealth, books are brought out. But they do no good, because the power behind their words is zero".

"The time has come to act. The call now is, Do ! Leap into the branch and save the world".

This call he gave to the youth of the world and to the mankind in 1896 from the soil of America. This call is eternal. Let us respond and implement fully this call now.

Fortunately, we have inherited a rich heritage in spirituality spreading over a period of thousands of years. Our sages and saints like the great rishis of the past as well as philosophers and poets like Swami Vivekananda, Shri Aurobindo, Mahatma Gandhi, Gurudev Tagore, Acharya Vinoba Bhave, Dr. Radhakrishnan and many others prophesied that India will develop the future model for human society as a whole. Whatever aberrations we are witnessing to-day are all temporary. In the race between forces of evil, violence and destruction and creative, constructive and forces of good, ultimately the forces that represent the best of humanity and truth will win.

Unfortunately, because of disinformation, there is a good deal of confusion, conflict and confrontation, leading to indiscipline in all walks of life and violence everywhere. Neither this is the soul of India nor the model we wish to provide to the rest of the world.

In this context, one recollects what Rabindranath Tagore said of the educated classes in our country in his time. He said that the educated classes were like a second storey added to an old family house with the architect forgetting to construct a staircase in between. Since then staircases are being opened and they are so many, that the basement and the second storey appear to be a wonderful structure with no purposeful design. Therefore, the universities are getting overcrowded. Whoever gets an idea to reform education, adds one more staircase.

Universities can no longer function as ivory towers. Even if we wish, they cannot remain alienated from the masses. Their relevance to the problems of the people cannot be remote. Their involvement in the vital developmental process should be significant. The demands on the Universities are being increasingly made by a growing society.

Swami Vivekananda had a scientific outlook in respect of our countrymen's religious and social habits defining purity. He decried our obsessive pursuit of personal purity saying : "Our Religion is in the kitchen. Our God in the cooking pot, touch me not. I am holy". Swami Vivekananda, after his visit to America, wrote, "that instead of education being confined to the elite, it should be broadbased". He meant that India should be a literate Nation. He further wrote, "Let our children go to the football field, let them play, let them have good exercise. Then they would be able to appreciate the Bhagavad Gita better. A physically strong nation is very important." Therefore, it is aptly said that the battle of Trafalgar was won in the playfields of Eton.

The New Education Policy is meant to ensure universalisation of elementary education in the country by 1995. Therefore, we have undertaken National Programme for removal of illiteracy. The main objective of the New Education Policy is that the students get the opportunity of vocational training so that as citizens they become producers of wealth. This will help in making our social objective of distributive justice meaningful. This requires that our youths should be equipped with the skills and competency for becoming active participants in economic growth.

Youth, who constitute the majority of our population today, are no longer just the leaders of tomorrow but of today. They have already inherited India with all its difficult problems and exciting opportunities and prospects. They have today the privilege of being part of the great adventure of uplifting millions of our people from poverty, malnutrition and ignorance, building a strong, united, progressive and peaceful India and this State and contributing to the peace and prosperity of the world.

It has been estimated that by 2000 AD, as much as 67% of the North-East population will be under 34 years of age. This will be a region of young people. This predominantly young population would seek novelty, variety and would display greater propensity for urban life styles.

As of today, in Manipur, the number of educated unemployed youth stands at $2^1/2$ lakhs. By 2000 AD, this number will grow to 4 lakhs. This underscores the urgent need for creating employment generating activities on short term and long term basis.

We should take all possible steps to overcome the growing frustration among the youth due to rising unemployment. Violence and violent activities are diseases of the modern society. We do not take adequate measures to prevent these diseases. We start fighting on war footing only when it appears in an epidemic form.

All our efforts should be directed to establish a healthy balance in the University system between education, research and social service.

In order to expose youth to social problems and to encourage them to go to the countryside and to render service, the National Service Scheme idea was mooted. But like all other good ideas this scheme has also turned into a formality.

Electronics industries provide ample scope in creating job opportunities. The study team appointed by the Department of Electronics of the Ministry of Science and Technology estimated that the total annual additional requirements of trained manpower in the electronic sector alone would be 1,25,252, by the end of the 7th Five Year Plan. This additional job opportunity refers only to direct employment in the electronic and computer sector. The indirect employment that would be generated in the economy is much more.

The Central Government has earmarked Rs.500 crores in the 8th plan for development of the electronic sector in the N.E. States for generating new employment for the youth. Our University should take advantage of this opportunity so that it can undertake manpower training in collaboration with the NEC.

The University has continued to achieve progress in various spheres. The number of Postgraduate Departments in the University has now increased to 20, with 5 Departments under the School of Humanities, 6 under the School of Social Sciences and 9 under the School of Science. After the last Convocation, 26 candidates have been declared successful for the award of Ph.D.degrees.

A story relating to the days of Tirumalanaicken of Madurai in 15th century comes to my mind. Shri C.Subramaniam, the present Governor of Maharashtra, narrated this story in one of his speeches. King Tirumalanaicken wanted to build the famous Meenakshi temple. Stone cutters were engaged for the purpose. The king asked one of the stone cutters, what he was doing. The stone cutter replied in a bitter tone that he was atoning for the sins of his past birth. The king then moved forward to another and put him the same question. He replied that it was his profession and he had to do it to earn his livelihood. The king then moved to a third cutter and put the same question to him. He replied in an ecstatic tone, "What more joy could there be than to participate in the construction of a temple for Mother Meenakshi".

We are building this University, the magnificent temple of learning and also the temple of Mother India. The feeling of dedication, devotion and participation of all the builders should be of the third stone-cutter's.

I feel like mentioning that the local ethos of the State and its surroundings characterised by regard for scholarship and learning, have contributed greatly to the spectacular progress of this University. Today, it is considered as one of the progressive Universities in the country - a seat of learning of which we are justifiably proud.

Ours is a growing University. On this important occasion, one thing comes to my mind. What will be our Manipur University by 2000 AD ?

I quote from the State Level Symposium document drafted by the organisers of this symposium belonging to Manipur University itself. As a dreamer and as an optimist, I always associate myself with those who see good dreams. The Report mentions :

"Imphal will become the most important academic and cultural centre in the entire North-East surpassing Guwahati and Shillong. Manipur University will develop to become the most outstanding and biggest University in the North-East and it will have almost all the faculties of a modern University in arts and sciences".

Let us dedicate ourselves, all united together as a well-knit team, to achieve this noble dream.

Indian Institute of Advanced Study

Rashtrapati Nivas, Shimla - 171005.

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2. The post is temporary but likely to continue. It carries all such allowances as are admissible to Central Government employees stationed at Shimla. Applications on plain paper giving name, date of birth, address, qualifications and experience and other relevant particulars supported by attested copies of certificates and testimonials should reach the Secretary (A&F), Indian Institute of Advanced Study, Rashtrapati Nivas, Shimla -171005 within fifteen days from the date of publication of this advertisement. A certificate from the competent authority that the candidate belongs to Scheduled Tribe community should also be enclosed. Candidates already in service must apply through proper channel.

Workshop on Question Banking

A 3-day Workshop on Question Banking in the subjects of Computer Sciences, Banking, Book Keeping, Accountancy and Educational Psychology was held at the Avinashilingam Institute of Home Science & Higher Education for Women, Coimbatore on 28-30 November, 1990.

Inaugurating the Workshop, Dr. Rajammal P. Devadas, Vice Chancellor of the host university, suggested that the participants may not only benefit from developing skills and competence in item writing and Question Banking but also make their contribution to the Question Banks proposed to be compiled by the AIU. She suggested that in addition to skills of writing, they must also learn to look into each others' items, make constructive suggestions and help prevalidating questions and items.

Dr. V. Natarajan, Director (Research) AIU in his keynote address outlined basic principles of Question Banking and in particular the development of valid and reliable questions/items in these three subjects through a series of specially conducted Workshops getting a large body of teachers to participate in item/question writing, prevalidating and interacting, and brought to the attention of the three groups the necessity of having a large variety of questions and items so that class tests as well end semester examinations could be put together with the help of such a large number of questions and items.

Dr Natarajan also delivered lectures in the areas of instructional objectives, design of selection type and supply type questions and prevalidation of question items. Participants at the end of every lecture participated in discussions and they were put into small groups to do several assignments including choice of objectives and abilities to be tested on the various syllabus topics preparing selection type items (constant alternative, multiple choice, multiple facet, matching and re-arrangements) and supply type questions (complete question, simple question, short answer questions, long answer and problem solving questions). In order to enable them to write good quality items and questions, illustrative examples in these three subjects were circulated for their perusal and comprehension. Each one of the participants then took up a portion of the syllabus and prepared questions and items within the topic content of the chosen area. They then added several technical values to every question, namely, the topic in which the question is set, the ability it purports to test, time for answering, marks that can be allotted for the correct answer etc. There were lively group discussions after individual assignments.

At the Valedictory function Dr. K. Kulandaivel, Registrar of the university, reiterated the need for question banks in these subjects as this would pave the way for introducing not only reforms and changes in question papers but would bring about desirable changes in teaching and learning.

Twentynine participants attended the workshop and produced nearly 3,500 question items. Of these, 2300 question items were selected after careful prevalidation.

Women's Studies Research Centre

Women's Studies Research Centre (WSRC) was recently inaugurated at the M.S. University, Baroda. Initiated at the Department of Human Development & Family Studies, Faculty of Home Science, this is the first interdisciplinary centre in Gujarat.

Dr. Kamalini Bhansali & Dr. Neera Desai, pioneers in the field of Women's Studies were the chief guests at the inaugural function.

Prof. (Mrs.) Amita Verma, Hon. Director of the Centre in her opening remarks talked about the direction of the WSRC in the field of Women's Studies and Research. She stressed that the thrust of the Centre would not only be to generate knowledge but to initiate actions on various issues concerning women. She outlined the activities initiated at the Centre and also detailed its plans for the future.

In her inaugural address, Dr. Bhansali emphasized the need to draw the strengths from the institution of family. Keeping a multidisciplinary approach of the Centre in focus, she made various suggestions in the areas of research and education.

Dr. Neera Desai who delivered the keynote address to students, academics and the representatives of voluntary organisations involved in Women's Studies & developmental work, cautioned the group about not becoming elitist and highly professional where sensitivity to women's cause takes second place. She warned us not to become 'Womenologist'. According to her the major role of women's studies centre is to make women visible in all spheres of life.

Dr. V.C. Shah, Vice-Chancellor of the university, who presided, brought out contradictions in the Indian society where women are glorified first and then terrorized.

In an open discussion organised on the occasion academics from different disciplines and the representatives from voluntary organisations shared their expectations and the extent of their involvement in WSRC. It was hoped that togetherness of all present would strengthen the foundation of Women's Studies Research Centre at M.S. University of Baroda.

All India Student Meet in Computer Science

The J.K. Institute of Applied Physics & Technology, under the auspices of the Department of Electronics & Communication, University of Allahabad proposes to organise an All India Student Academic Meet in Computer Science, "SRIJAN-91" from January 17 – 19, 1991. The main objectives of the event are to stimulate scientific talent by a competitive process and recognition of merit, to provide a forum for interaction between students and scientists, as well as academia and industry, to encourage the participating institutions to take more interest in the search for scientific ability, and to help in building up a body of professionals who will contribute to the scientific and technological advancement of our country, both in pure and applied fields.

The event will cover all areas of Computer Science and related disciplines. More than 250 institutions from all over India are being invited to participate in the Technical Paper Contest and Software Competition. Eminent experts from R & D Organisations, Academia and Industry shall be invited to deliver talks on current trends in Computer Science and Technology.

Further details can be had from Mr. Rajiv Ranjan Tewari, Convenor SRIJAN-91, J K Institute of Applied Physics and Technology, Department of Electronics and Communication, University of Allahabad, Allahabad-211 002.

National Library of Educational & Psychological Tests

The National Council of Educational Research and Training (NCERT) New Delhi, in the year 1978, approved the proposal for the development of National Test library, now known as National Library of Educational & Psychological Tests.

The purpose of the National Library of Educational & Psychological Tests is to cater to the needs of the investigators engaged in educational and psychological research in the Council as well as in other institutions of the country. These institutions may be concerned with either education, medicine, industrial, business management of banking management, social work, social welfare, child development, family studies etc.

The library has a good collection of Indian as well as foreign tests in various domain like Intelligence, Aptitude, Personality, Achievement, Management, Interest, Guidance etc.

The library has also brought out several test bulletins which consist of test reviews, information about new tests and various other technical information which may be helpful for the reseachers. The library has also collected specimen copies of the unpublished tests used in Ph.D. thesis from various sources.

Further information can be obtained from Dr. M.C. Jain Incharge, NLE&PT, NCERT, Sri Aurobindo Marg, New Delhi-16.

Adult Education Classes for Varsity Employees

The Centre for Adult & Continuing Education & Extension Activities of Kakatiya University has started an adult education programme for the class IV employees of its own university. Prof. Jafar Nizam, Vice-Chancellor, who inaugurated the programme recently, said that it was impossible for anyone to survive in the present day society without education. Everyone should therefore make an attempt to have at least elementary knowledge of education so that they could read the letters, sign the salary statements and above all save themselves from the embarassment before their children when they fumble for answers when asked by their own children about the meaning of certain words.

He called upon the educated youth to give a helping hand for the successful conduct of adult education programme launched by the Centre.

Dr. G. Sreenivas Reddy, Director of the Centre, presenting the report said that the adult education programmes would gradually spread to the rural areas in order to achieve hundred per cent literacy in tune with the national policy on education.

UGC Test Postponed

The University Grants Commission Junior Research Fellowship (JRF) and Lectureship Eligibility Test-1990 scheduled to be held at 83 different university centres on December 23, 1990 has been postponed to January 20, 1991. Other conditions/arrangements will remain unchanged.

News from Agril. Universities

Convention of Agricultural Universities

Dr. Y.S. Parmar University of Horticulture and Forestry recently hosted the 18th Convention of the Agricultural Universities. The convention deliberated on the three basic areas: challenges and opportunities and agriculture; the role and strategies of Agricultural universities to meet the challenges and utilise the opportunities; and the institutional linkage of agricultural universities for coordinated action with development institutions and state departments.

Inaugurating the conference, Shri Shanta Kumar, Chief Minister of Himachal Pradesh, called upon the academics to shrug off the "mental slavery" that followed from exclusive use of English, and take up the challenge of making India's vernacular languages their medium. Only then, he said, would the beneficial applications of their research be able to reach the ordinary farmers.

The address by the President of the Indian Agricultural Universities Association, Dr. A. Apparao, directed the attention of the delegates to the new fields of biotechnology and the demands it would make on agricultural universities and scientists if India was not to be left behind. The universities should also reorient their work towards processing and marketing systems. Not only would attention to this area result in increasing the value of agricultural produce, but it would also create employment opportunities for the rural people.

He called upon the universities to make environmental problems their concern, saying that it was time to move beyond the green revolution concept and think not only of growth but also of growth with sustainability.

Welcoming the delegates, Dr. M.R. Thakur, Vice-Chancellor of Y.S. Parmar University, stressed the need for developing appropriate technologies not only for agricultural production but also for the health and comfort of villagers. The universities, he said, could play a major role in raising the standard of living in the rural areas by introducing improved machinery and home or community facilities which were more efficient without being more costly or complicated.

Over 100 delegates, including 16 Vice-Chancellors and 72 deans and scholars from agricultural Universities attended the convention.

Indo-U S Collaboration in Eco Research

The United States Department of Agriculture released a Rs 18.34 lakh grant to the Institute of Agricultural Sciences at Banaras Hindu University for an Indo-US ecological study to assess the role which key organisms play in the decomposition and fertility of soil.

The three-year joint study will help identify actions that can be taken to improve the biological conditioning of Soil, and will characterise the effects of organic fertilisers and pesticides on soil fauna.

The process of decomposition in cropping systems is directly affected by the flora and fauna inhabiting the soil, as well as by the types and amounts of fertilisers and pesticides used.

For this reason, researchers would first establish a methodology for sampling and extracting arthropods and annelids (insects and worms) from the soil, and then identify organisms from grassland, cropland and forest soils in Uttar Pradesh.

This collaborative research would also contribute to US efforts to develop more efficient management practices for improving soil fertility by establishing a better understanding of the contributing factors.

Dr Janardan Singh, Professor and Head of the Department of Entomology at the Institute of Agricultural Sciences, will be the principal investigator for the cooperative ecological study, working with Dr Clive A Edwards, Chairman of the Department of Entomology at Ohio State University in Columbus.

Women in Agriculture Day at TNGDNAU

The Krishi Vigyan Kendra of the Tamil Nadu G.D.Naidu Agricultural University, Coimbatore recently organised a programme on women in Agriculture. It was felt that the farm women were no longer in the periphery; their involvement in farming and farm-based activities was increasingly felt now. The convenors of various groups discussed on the potentialities of technology adoption by village women.

In his presidential address, Dr. S. Jayaraj, Vice-Chancellor of TNGDNAU, citing the extension research base which stresses the key-role of farm women in the decision making process of many farm activities, said that need based agricultural training programmes would be organised exclusively for farm women by the university.

Lauding the effective functioning of women Farmers' Discussion Groups for the continuous efforts in transfer of new farm innovations to the fellow farmers in the villages, the Vice- Chancellor stressed the need for providing balanced diet to children for sound physical and mental development and added that the crop varieties evolved at TNGDNAU from time to time are looked for nutritive quality.

The Vice-Chancellor wanted many small scale agrobased industries started in the villages. The small processing units of fruits, vegetables, production of seedlings, mushroom production and seed production, processing and storage were some of the potential areas, which suit very well to the patience and preservance of womanhood in the villages, Dr. Jayaraj opined.

Dr. G. Perumal, Director of Extension Education in his special address enunciated the increasing role of farm women and impressed upon the participants on the various farm activities to increase the total farm income.

A large gathering of farm women, social workers and women members of voluntary organisations participated in the programme.

Horticultural Officers Workshop

"To avoid the problems of wastage in handling of the horticultural crops products, it is imperative on the part of scientists, agricultural engineers and farm economists to evolve the required infrastructure and production base so that a proper post harvest technology may also be made available to the farmers and they may further be encourged to take up farming of Horticultural crops", said Dr. A. L. Chaudhry, Vice-Chancellor, of Haryana Agricultural University while speaking at the inaugural session of the three day Horticultural Officers Workshop. Dr. Chaudhry further said that scientist should take up survey before the sowing season of each crop to ascertain that which crop had to be grown in which areas so that farmers may get remunerative prices of these crops. The grape which sells around three to four Rs. per kg. in the peak season of its production, is sold at 15 to 20% higher rate when it is processed. The Vice-Chancellor appreciated the research work done by the scientists of the university on these crops and hoped that alongwith the "Food For All" slogan "Nutrition For All" would be applicable in Haryana very soon.

News from Abroad

M. A. in Modern International Studies

The Institute of International Studies of the University of Leeds has introduced M A in Modern International Studies. This Master's course offers an opportunity to combine a broad study of contemporary international affairs with detailed research in a student's particular field of interest. It would benefit especially those requiring a thorough grounding in international affairs preparatory to careers in journalism, banking, commerce and industry, and those anticipating or engaged in diplomatic or military service. Such a course also provides an excellent springboard for those who intend to proceed to a higher research degree, usually the MPhil or the PhD.

The Course has three elements: (1) The core paper taken by all students, in **Contemporary International Relations** (1945 to the present day). Against a background of regional studies, students have an opportunity to follow their individual interests: for example, strategic questions, or the working of international organisations, or economic aspects of relations between the powers.

(2) The second element of the degree is an Option chosen from a long list. These include:

- Business, State and World Economy since 1945
- European Unification: from NATO to the Twelve
- International Law
- British Foreign Policy, 1814-1956
- Cananda among the Powers, 1945-1984
- Religious Factors in Contemporary Europe
- Russia and Pacific Asia, 1905-1985
- The Middle East in the 20th CenturyInternational Economic History since 1820
- Chinese Politics and the Soviet Union, 1919-1941
- France in the world since 1945
- British and Commonwealth Campaigns, 1914-1918
- Social Science Perspectives of Chinese Communities in the World
- Comparative Constitutional Law
- The United States in the World Economy to 1960

- The USSR and Eastern Europe since 1919
- International History, 1856-1953
- European Community Social & Economic Integration and Law
- The Chinese Communist Party in Revolution
- East Asian Development Experience, 1860 to the present day
- Environmental Studies
- The Political Economy of the Southern African region in the 20th century
- Human Rights and International Law
- China: One Nation, Two Systems
- War and the Media
- Britain's external policy after 1956

(Please note that not every option will be available in each academic year. There will always be a wide choice, however).

3. The third element of the degree is a dissertation of some 15,000 words. The subject may derive from the core paper or one of the options, or may stand quite independently of them. Students may elect, alternatively, to undertake two option courses concurrently instead of writing a dissertation.

The course begins on 1st October each year, and is completed by the end of the following June.

Further details can be had from Dr John Hemery, Institute for International Studies, Parkinson Building, The University, LEEDS LS2 9JT

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AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology,. Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies . Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed on the latest acquisitions through our column 'Additions to the AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month', while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research Scholars and students of education are welcome to use these resources. The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

RESEARCH IN PROGRESS

A list of Research Scholars registered in Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Michael, Benny. **Some problems in the homological theory of modules especially those relating to determining the nature of its endomorphism module.** Kerala. Dr M I Jinnah, Reader, Department of Mathematics, University of Kerala, Trivandrum.

2. Mishra, Om Prakash. **Projective and injective modules and their generalization.** BHU. Dr B N Pandey, Department of Applied Mathematics, Institute of Technology, Banaras Hindu University, Varanasi.

3. Modak, Madhav Ramchandra. **Lattice paths and enumeration of indexed monomials.** Panjab. Prof S S Abhyankar, Department of Mathematics, Panjab University, Chandigarh.

4. Pratheep, B. **The structure of certain classes of algebraic and topological semi-groups.** Kerala. Dr A R Rajan, Reader, Department of Mathematics, University of Kerala, Trivandrum.

5. Purnachandra Rao, Koya. **The role of the free gravitational field in inflationary cosmology.** Bhavnagar. Prof J Krishna Rao, Acting Vice Chancellor, Bhavnagar University, Bhavnagar.

6. Radhe Shyam. **Distribution theory and application.** BHU. Prof R S Pathak, Department of Mathematics, Banaras Hindu University, Varanasi.

7. Rajendran, D. **Some semi group of operators on topological vector spaces.** Kerala. Dr K S Subramonim Nampoothiripad, Prof and Head, Department of Mathematics, University of Kerala, Trivandrum.

8. Sandhya, E. **Geometric infinite divisibility and its applications.** Kerala. Dr R N Pillai, Prof and Head, Department of Statistics, University of Kerala, Kariavattom.

9. Sharma, Ram Husnehi. **Some problems on fixed point theorems.** HS Gour. Prof S K Srivastava.

10. Thakur, Manjulata. **A role of continuous type of functions in topology.** HS Gour. Dr Ram Prasad.

Statistics

1. Somasekharan Pillai, M. **Efficient estimation in the errors in variables model.** Kerala. Dr Jacob Sundararaja, Prof, Department of Statistics, University of Kerala, Kariavattom.

Physics

1. Devi Singh. **A study of some physical properties of polymeric materials.** Delhi. Prof P C Jain, Department of Physics, University of Delhi, Delhi and Dr M C Johri, Forensic Science Laboratory, Delhi.

2. Hari, S S. **Equatorial F-region dynamics.** Kerala. Dr B V Krishnamurthy, Acting Director, Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram.

3. Issac, Mary. **Investigations on conductivity, dielectric and spectroscopic properties of crystals.** Kerala. Dr V Unnikrishnan Nayar, Prof, University of Kerala, Trivandrum.

4. Manohar Lal. **Characterisation of multicomponent amorphous semiconductors.** Panjab. Prof K K Srivastava, Department of Physics, Panjab University, Chandigarh.

5. Sharma, Ramesh Chand. **Spectroscopy with lasers.** BHU. Dr P N Gupta, Department of Physics, Banaras Hindu University, Varanasi and Dr R P Singh, Department of Physics, Banaras Hindu University, Varanasi.

6. Singh, Pawan. **Hyperfine interactions in metallic alloys.** Panjab. Prof S Prakash, Department of Physics, Panjab University, Chandigarh.

7. Vasudevan Nair, Selvakumar. **Electronic and optical properties of small partices.** Devi Ahilya. Dr K C Rastogi, Scientific Officer, Government of India, C A T, Indore.

8. Vijayakumar, G. **Aerosols in the mixing region.** Kerala. Dr B V Krishnamurthy, Acting Director, Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram.

Chemistry

1. Aiswarya Kumari, K. **Hydrophilic polymer supports for solid phase peptide synthesis.** Kerala. Dr K Sreekumar, Department of Chemistry, University of Kerala, Trivandrum.

2. Anilkumar, A T. **Studies towards the synthesis of diterpenoids having uncommon ring systems.** Kerala. Dr Managalam S Nair.

3. Anil Kumar, M O. **Structural and mechanistic studies of macromolecular metal chelates.** Kerala. Dr K Sreekumar, Department of Chemistry, University of Kerala, Trivandrum.

4. Barsola, Raghuvir. **Graft copolymerization on to polypropylene and nylon-6.** HP. Dr (Mrs.) Inderjeet Kaur, Department of Chemistry, Himachal Pradesh University, Shimla.

5. Bharati Rao, Telikicherla. **Asymmetric synthesis using phase-transfer catalysis.** Kerala. Dr J Madhusoodana Rao, Scientist, Regional Research Laboratory, Trivandrum.

6. Chaturvedi, Kamalakant. **Exafs studies of coordinated sulpha drugs and their derivatives by chelation with transition and rare earth metals.** D.Sc. Devi Ahilya.

7. Dutta, Pradip Kumar. **Synthesis of novel polymers by activated displacement reaction with/without pressure.** IIT Kharagpur. Prof Sukumar Maiti, Materials Science Centre, Polymer Division, Indian Institute of Technology, Kharagpur.

8. Geethakumari, K. **Enzyme analogue built polymers as solid phase organic reagents.** Kerala. Dr K Sreekumar, Department of Chemistry, University of Kerala, Trivandrum.

9. Gopal, Meera. **Studies on some lanthanide complexes with certain mixed ligands.** Kerala. Dr P Indrasenan, Prof, Department of Chemistry, University of Kerala, Trivandrum.

10. Krishnan, G. **Spectral and magnetic studies on some metal complexes.** Kerala. Dr C P Prabhakaran, Prof, Department of Chemistry, University of Kerala, Trivandrum.

11. Madhukumar, A. **Studies on sorption reaction and some ecological implications of the coconut husk retting grounds in Kerala.** Kerala. Dr T S Anirudhan, Department of Chemistry, University of Kerala, Trivandrum.

12. Mathew, Jollyamma. **Studies in nitrogen sulphur heterocycles.** Kerala. Dr C P Joshua, Prof, Department of Chemistry, University of Kerala, Trivandrum.

13. Mathew, Suresh. **Studies on solid-state thermal de-composition of some copper amine complexes.** Kerala. Dr K N Ninan, Head, P S C Group, Vikram Sarabhai Space Centre, Trivandrum and Dr C G Ramachandran Nair, Head, Department of Chemistry, University of Kerala, Trivandrum.

14. Moni, M. **Metallon separation using macromolecular chelates.** Kerala. Dr K Sreekumar, Department of Chemistry, University of Kerala, Trivandrum.

15. Nag, Anupma. **Transport properties of some I :I electrolyte solutions through ion exchange membranes.** HP. Dr R L Blokhra, Department of Chemistry, Himachal Pradesh University, Shimla.

16. Nageshwara Rao, Venkata. **Thermodynamic and transport studies of some multicharged electrolytes in binary mixtures of aqueous dipolar aprotic solvents.** HP. Dr M P Parmar, Department of Chemistry, Himchal Pradesh University, Shimla.

17. Pradeep Kumar. **Methods for the determination of hydrazine derivatives and their applications in pharmaceutical analysis.** HP. Dr B C Verma, Department of Chemistry, Himachal Pradesh University, Shimla.

18. Pushpa Devi. **Transport properties of non-aqueous electrolyte solutions.** HP. Dr V K Syal, Department of Chemistry, Himachal Pradesh University, Shimla.

19. Rajendra Prasad. **Vibrational modelling of kinetic isotope effects and mechanistic studies of some reactions.** D.Sc. Devi Ahilya.

20. Ram, Lal Chand. **Iron-bearing minerals in some bituminous and lean Indian coals and their tansfer studied by Mossbauer spectroscopy and radiolysis of coals.** BHU. Dr P S M Tripathi, Asstt Director, Central Fuel Research Institute, Dhanbad and Prof S P Mishra, Department of Chemistry, Banaras Hindu University, Varanasi.

21. Shaji, K J. **Study of the synthesis of acyclic and cyclic compounds containing double and triple compounds.** Kerala. Dr M J Chandy.

22. Sharma, Kusum. **Chemistry of hydroxamic acids and their derivatives : Studies of 1,3-0--N acyl migration in isoimides prepared from N-acyl-O-alkyl hydroxylaminies.** HP. Dr B N Mishra, Department of Chemistry, Himachal Pradesh University, Shimla.

23. Sharma, Yudhvir Singh. **Transformations of inorganic constituents in soil-plant system added through waste water.** Delhi. Dr Pawan Mathur, Department of Chemistry, NBSSL, Pusa and Dr K V Pauwal, Department of Chemistry, NBSSL, Pusa.

24. Sreevidya, N. **Liquid rubber toughened epoxy.** Kerala. Dr V N Krishnamoorthy.

25. Sujayakumari, S. **Studies on some mixed ligand complexes of thorium (IV) and diaxouranium(VI).** Kerala. Dr P Indrasenan, Prof, Department of Chemistry, University of Kerala, Trivandrum.

26. Tarjeet Singh. **Synthetic studies in heterocyclic chemistry.** BHU. Dr R L Gupta, Department of Chemistry, Banaras Hindu University, Varanasi.

27. Thomas, K V. **Photo-osygenation studies of imidazaline-2-thiones.** Kerala. Dr C P Joshua, Prof, Department of Chemistry, University of Kerala, Trivandrum.

28. Upadhyay, Neelam. **Thermodynamic and transport properties of some solutions involving acetonitril.** HP. Dr R L Blokhra, Department of Chemistry, Himachal Pradesh University, Shimla.

Earth Sciences

1. Banda, Kuldeepak. **Petrology and geochemistry of alkali granites and the associated acid volcanics around Piplun, District Barmar, West Rajasthan, India.** Panjab. Dr Naresh Kochhar, Department of Geology, Panjab University, Chandigarh.

2. Pandey, D S. **Hydrological and geological environment around Distt Mahendragarh, Haryana.** BHU. Dr S B Singh, Scientist 'B', Pollution Study Directorate, Central Ground Water Board, Lucknow and Dr R N Tiwari, Department of Geology, Banaras Hindu University, Varanasi.

3. Sah, Gopal. **Agriculture meteorology.** BHU. Prof B R D Gupta, Department of Geophysics, Banaras Hindu University, Varanasi.

4. Varma, Ajaya Kumar. **Studies on groundwater resource potential and management of the coral atolls of Lakshadweep, Union Territory of India.** Kerala. Dr K K Ramachandran, Centre for Earth Science Studies, Thiruvananthapuram.

Engineering & Technology

1. Alam, Shamshi Maher. **To design and configure intelligent telemetered seismic networks and to workout design strategy of a "National seismic data centre" for Indian subcontinent.** Panjab. Dr Y C Chopra, Head, Department of Computer Science and Engineering , Panjab Engineering College, Chandigarh and Dr S K Arora, Senior Scientist, Seismology Division (Nuclear Physics Group), Bhabha Atomic Research Centre, Bombay.

2. Deshmukh, Prakash R. **Electron beam lithography.** BHU. Dr W S Khokle, Central Electronics Engineering Research Institute, Pilani and Prof B B Paul, Department of Electronic Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

3. Gupta, Raj Kumar. **EM beam propagation through slow and fast waves structures used in microwave tubes.** BHU. Dr S M Joshi, Central Electronics Engineering Research Institute, Pilani and Prof B N Basu, Department of Electronic Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

4. Hedayati, Mohammad Reza. **Computer controlled gun firing system.** BHU. Prof M Bhattacharya, Department of Electrical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

5. Karaikudi, P Jayakrishnan. **Electro-deposition of resins and pigmented resins on metallic substrates from aqueous systems.** Panjab. Dr J D Sharma, Department of Chemical Engineering and Technology, Panjab University, Chandigarh and Dr S Guruvian, Central Electrochemical Research Institute, Karaikudi.

6. Mahapatra, Amulya Chandra. **Microbial production of secondary metabolites using hybridoma techniques.** BHU. Dr Subir Kundu, Department of Biochemical Engineering, Banaras Hindu University, Varanasi.

7. Pandey, Hriday Narayan. **Ferro-electric and super conducting ceramics.** BHU. Dr P Pandey, School of Material Science and Technology, Varanasi and Dr Om Prakash, School of Materials Science and Technology, Institute of Technology, Banaras Hindu University, Varanasi.

8. Sabegh, Jalal Sajedi. **Industrial management corporate planning and policy design : A case study.** BHU. Dr S K Sharma, Department of Mechanical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

9. Srivastava, Sajal Kumar. **Operations management problems in flexible manufacturing system and some related issues.** BHU. Prof N K D Talukdar, Department of Mechanical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.

10. Sriveeraraghawan, S. **Studies of elctro-deposition of metals from perchloric acid based electrolytes.** Panjab. Dr J D Sharma, Department of Chemical Engineering and Technology, Panjab University, Chandigarh and Dr K Bala Krishnan, Central Electro-Chemical Research Institute, Karaikudi.

BIOLOGICAL SCIENCES

Forensic Sciences

Srivastav, Vimal Sagar. **Studies on some immunogenic animal venoms.** HS Gour. Dr Snehrani Jain and Dr D K Mukharaya.

Biochemistry

Parekh, Divya. **Studies on the effects of heavy metal pollutants, cadmium and lead on chlorophyll metabolism.** Devi Ahilya. Dr Rekha Puranik, Reader, School of Bio-Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

Botany

1. Anupama. **Effect of processsing on composition and functional properties of Indian rapeseed, Brassica campestris var. toria protein isolates.** Panjab. Dr S S Dua, Department of Botany, Panjab University, Chandigarh.

2. Harminder Kaur. **Cytological studies in asymbiotically raised orchid seedlings: A study in vitro.** Panjab. Prof S P Vij, Department of Botany, Panjab University, Chandigarh.

3. Jasveer Kaur. **Studies of self-incompatibility and cytology of Brassica chinensis and Raphanus sativus (Cruciferae).** Panjab. Prof S C Verma, Department of Botany, Panjab University, Chandigarh and Prof T S Sareen, Department of Botany, Panjab University, Chandigarh.

4. Mahajan, Savita. **Biotechnology of fats and organic acids (particularly ascorbates) from some fungi.** Panjab. Prof G S Rawla, Department of Botany, Panjab University, Chandigarh and Prof C L Mandahar, Department of Botany, Panjab University, Chandigarh.

5. Mandeep Kaur. **Cell wall degrading enzymes of some Helminthosporium spp.** Panjab. Prof C L Mandahar, Department of Botany, Panjab University, Chandigarh.

6. Mishra, Surjya Shankar. **Induction of differential senescence and basipetal mobilisation of photosynthates from cotyledons to roots in Raphanus sativus seedling.** Sambalpur. Dr U C Biswal, Prof, School of Life Science, Sambalpur University, Burla.

7. Ray, Sudip. **Floristic studies and biological spectrum of Dewas District, MP.** Devi Ahilya. Dr C M Solanki, Head, Department of Botany, P M B Gujarati Science College, Indore.

8. Rekha Rani. **Studies on cytology, male sterility and genetics of self-incompatibility in Eruca sativa L (Cruciferae).** Panjab. Prof S C Verma, Department of Botany, Panjab University, Chandigarh.

9. Usha Devi. **Studies on sexual incompatibility and chromosome behaviour in Brassica campestris L and Raphanus raphapistrum (Cruciferae).** Panjab. Prof S C Verma, Department of Botany, Panjab University, Chandigarh and Prof T S Sareen, Department of Botany, Panjab University, Chandigarh.

Zoology

1. Chandramohanan Nair, K R. **Hormonal control of reproduction in castor semilooper, Achoea janata Linn.** Kerala. Dr D Muraleedharan, Department of Zoology, University of Kerala, Kariavattom.

2. Girijakumari Amma, P. **Arylsulfatase producing microorganisms associated with foulers of the South West Coast of Kerala.** Kerala. Dr K Dhevendran, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

3. Sanjay Kumar. **Studies on some glycolytic enzymes of rodent malaria parasite, Plasmodium berghei.** Panjab. Dr H S Banyal, Department of Zoology, Panjab University, Chandigarh.

4. Sarabjit Kaur. **Comparison of growth rate of Indian major carps from ponds, reservoir and artificial lake.** Panjab. Prof K K Tandon, Department of Zoology, Panjab University, Chandigarh and Dr M S Johal, Department of Zoology, Panjab University, Chandigarh.

5. Sikdar, Malbika. **Some factors controlling the reproduction of male spotted munia, Lonchura punctulata and black headed munia, Munia malaca.** Devi Ahilya. Dr Anand Kar, Asstt Prof, School of Life Science, Vigyan Bhawan, Khandwa Road, Devi Ahilya Vishwavidyalaya, Indore.

Medical Sciences

1. Gupta, Jay Narayan Prasad. **Management information and economic system in surveillence of vaccine preventable diseases.** BHU. Dr S C Mohapatra, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

2. Pathak, Bhawana. **Etiopathogenesis and treatment of amavata, rheumatoid arthritis.** BHU. Dr K P Shukla, Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

3. Rabi, T. **Prognostic value of DNA ploidy and S-phase fraction in relation to clinical pathologic factors in breast cancer under the influence of indigenous drugs.** BHU. Prof G C Prasad, Department of Shalya Shalakya, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

4. Sharma, Alaka. **Biochemical studies in kalazar.** BHU. Dr Shyam Sundar, Department of Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

5. Tiwari, Anil Kumar. **Dry eye syndrome.** BHU. Prof H V Nema, Department of Ophthalmology, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities.

PHYSICAL SCIENCES

Mathematics

1. Chattopadhyay, Syamal. **Some problems of optimization with special reference to fractional programming.** Calcutta.

2. Chattopadhyay, Utpal. **A study of some queuing models.** Calcutta.

3. Das, Sarama. **On partial differential operators and special functions.** Calcutta.

4. Gupta, Vijay. **On certain linear positive approximation methods.** Roorkee.

5. Hanumantha Rao, Sanka. **On congruences in eventually regular semigroups and semigroup induced by a distributive lattice.** Andhra.

6. Rawat, Pratima. **Some problems on fixed point theorems.** HS Gour. Prof P L Sharma, Head, Department of Mathematics, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

7. Sunita Rani. **A study in the growth properties of analytic functions.** Roorkee.

Statistics

1. Jain, Nirmal. **Some contributions to survey sampling.** Delhi.

2. Shaffi Ahmed, S. **Some designing techniques for stochastic models in reliability with focus on MTBF performance.** Venkateswara.

3. Singh, Shri Kant. **On some migration models and their applications.** BHU. Dr K N S Yadav.

Physics

1. Bhaskara Rao, Katiki. **K-Capture probabilities by sum-peak method.** Andhra.

2. Chatterjee, Achintya Kumar. **Studies on molecular behaviour of some dielectric liquids.** NBU.

3. Gireesan K. **Study of the thin films and single crystals of compound semiconductors-SnSe and $SnSe_2$.** Baroda.

4. Inamdar, Sanjeev Ramchandra. **Study of molecules using lasers: Energy transfer dye lasers and energy transfer mechanisms.** Karnatak. Dr M I Savadatti, Vice Chancellor, Mangalore University, Mangalore.

5. Krishna Rao, Pasupula. **Ellipsometric study of hydration processes in portland cement.** Andhra.

6. Mishra, Ganeshwar. **Studies on cerenkov free electron lasers.** IIT Delhi. Prof V K Tripathi, Department of Physics, Indian Institute of Technology, New Delhi and Dr V K Jain, Assoc Prof, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

7. Mukhopadhyay, Gangabrata. **A study on some recent problems in cosmology.** Calcutta.

8. Narender Reddy, S. **Study of charge transport in pure doped and dispersed strontium nitrate solid electrolyte system.** Osmania.

9. Padhy, Priyadarshini. **Three body formalism for deuteron stripping reactions.** BHU. Prof V S Mathur.

10. Pangatiwar, A W. **Study of some scattering processes involving charge particles and atomic systems.** Roorkee.

11. Poria, K C. **Reactivity at defects in crystals.** Saurashtra. Dr B S Shah.

12. Raj,V Ramdev .**Hillford potential description of heavy ion elastic scattering.** Osmania.

13. Sreedhar, B. **Electron spin resonance spectra of some transition metal and rare-earth ions in sulphate glasses.** Venkateswara. Prof J Lakshman Rao, Department of Physics, Sri Venkateswara University, Tirupati.

14. Subramaniyam, K V S. **Studies on pulse dispersion in multimode and single mode optical fibres.** BHU. Prof K K Dey.

15. Surinder Singh. **Measurement of X-Ray fluorescence cross-sections and applications using energy dispersive XRF technique.** Panjab.

16. Talukdar, Indranil. **Linear and parametric instabilities of whistler waves in a plasma.** IIT Delhi. Prof V K Tripathi, Department of Physics, Indian Institute of Technology, New Delhi and Dr V K Jain, Assoc Prof, School of Environmental Science, Jawaharlal Nehru University, New Delhi.

17. Tripathi, Deepti. **Hydrogen passivation studies on Pd/Si diodes.** BHU. Prof S Chandra.

18. Tulasiramakrishna Reddy, K. **Studies on prospective solar materials-based thin film solar cells.** Venkateswara. Prof P Jayarama Reddy,Department of Physics, Sri Venkateswara University College, Tirupati.

19. Varalakshmi, Malladi. **Studies on diurnal long period and solar cycle variations of radiowave absorption in the lower ionosphere.** Andhra.

20. Verma, Girish. **Study of electret effect in polymethyl methacrylate (PMMA) and polystyrene (PS) blends.** Durgawati. Dr Ranjeet Singh, Department of Physics, Rani Durgawati Vishwavidyalaya, Jabalpur.

Chemistry

1. Balraj, G. **Studies on transition metal complexes of 5-arylazo-8-quinolinols in solution.** Osmania.

2. Banerjee, Sushanto. **Kinetics and mechanism of condensation reactions of (i) 2-hydroxyacetophenone formaldehyde (ii) O-cresol-acetone (iii) p-cresol-acetone and p-cresol-acetophenone (iv) saligenin-acetone (v) Resorcinol-acetone in different media.** Delhi.

3. Bhadoria, Brijesh Kumar. **Studies on phytoestrogens of Sopubia delphinifolia (Fam. Scrophulariaceae).** HS Gour. Prof V K Saxena, Department of Chemistry, Dr Harisingh Gour Vishwavidyalaya, Sagar.

4. Bhashni, Mridu. **Studies on the chemical modification of cellulose and physico-chemical properties of the products.** Kurukshetra.

5. Chitre, Ravindra Shankerrao. **Electro-chemistry of certain ions in a low melting nitrate eutectic.** Baroda.

6. Fernandes, Y J. **Studies on synthetic drugs.** Saurashtra. Dr (Ms) H H Parekh.

7. Goyal, Rma Kant. **Volumetric and viscometric studies of amino acid solutions in aqueous potassium thiocyanate at 288 to 308K.** Delhi.

8. Gurpreet Singh. **NMR and Mossbauer studies of copolymers.** IIT Delhi. DR A S Brar, Department of Chemistry, Indian Institute of Technology, New Delhi.

9. Hafeez-ur Rehman. **Studies in the chemistry of conjugated acetylonic nitriles.** Roorkee.

10. Hingorani, Sunita R. **Synthesis of new multidentate ligands and their metal complexes.** Durgawati. Dr B V Agrawal, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur.

11. Karanjai, Malay Kanti. **Study of thin films deposited by the dipping and related techniques and their application in solid state devices.** NBU.

12. Lahiri, Amaresh Chandra. **Investigation on some 2-alkylamido-6-bromo-4H-1, 3, 2-benzodioxaphosphorin 2-sulphide having pesticidal activities.** NBU.

13. Maharana, Satyananda. **Physico-chemical studies on arsenate phosphate exchange in calcium, strontium hydroxylapatites.** Sambalpur. Dr P N Patel, Lecturer, Department of Chemistry, G M College, Sambalpur.

14. Mishra, R C. **A simulation study of multi product scheduling in flowship and job shop systems.** Roorkee.

15. Mohammad Mukhlesur Rehman. **Studies on the electrodeposition on nickel from mixed aqueous-nonaqueous baths.** BHU. Prof P K Tikoo.

16. Mukundan, M. **Synthesis, structural and antimicrobial studies of some movel (E)-3-(2)-(Aryl sulphonyl) Ethenyl -4,H-1-Benzopyran-4-ones and their cyclopropyl derivativies.** Venkateswara. Prof M S R Naidu, Department of Chemistry, Sri Venkateswara University College, Tirupati.

17. Narasimha Reddy, K Lakshmi. **Synthesis of some biologically active compounds.** Osmania.

18. Pathak, Manisha. **Studies of organised molecular assemblies and their utilization in modification of chemical reactivity.** IIT Delhi. Dr H M Chawla, Department of Chemistry, Indian Institute of Technology, New Delhi.

19. Patel, Bipinkumar Kanjibhai. **The study on graft copolymers of carboxymethyl amylose.** Patel. Dr H C Trivedi, Prof, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

20. Raju, K V S N. **Study of the physico-chemical properties of polymeric materials with special reference to their interaction with solvents, cosolvents and pigments.** Osmania.

21. Raveendra Nadha Reddy, K. **Studies on peanut, Arachis hypogaea L., proteins.** Roorkee.

22. Shivaprasad, K H. **Studies in metal complexes.** Gulbarga. Dr B R Patil, Reader, Department of Chemistry, Gulbarga University, Gulbarga.

23. Singh, Pramod Kumar. **Isolation, characterization and structural investigations on some transition metal complexes of biologically active sustituted hydrazones.** Delhi.

24. Singh, Raj Kumar. **Coordination chemistry:Formation constants of mixed ligand complexes of UO2/2+.** HS Gour. Prof M C Saxena, Department of Chemistry, Dr Harisingh Gour Vishwavidyalaya, Sagar.

25. Sinha, K Vijay. **Studies on graft copolymers of carboxymethyl starch.** Patel. Dr B C Trivedi, Prof, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar.

26. Srinivasa Murti, Sistla. **Some new aspects in the analysis of lead-zinc smelter products.** Andhra.

27. Srivastava, Vinod. **Synthesis and ligand chemistry of some (Te, N) and (Te,N,Te) donors.** IIT Delhi. Prof B L Khandelwal and Dr A K Singh, Department of Chemistry, Indian Institute of Technology, New Delhi.

28. Surendra Nath, K V. **Synthesis and ion exchange properties of hydrous titanium oxide and crystalline tin (IV) arsenophosphate ion exchangers.** Roorkee.

29. Suresh Prasad. **Studies on the solvent extraction and chelates of 3d-transition metals.** BHU. Prof D C Rupainwar.

30. Tiku, Asha. **Synthesis and polymorphism in some liquid crystalline homologous series.** Jammu. Dr N K Sharma.

31. Upadhaya, Jetander Mohan. **Study of lime pozzolana hydraulic binders.** Jammu. Dr S K Mehta.

32. Venkatasubba Naidu, N. **An investigation in water pollutants: Analysis of carbamate pesticides.** Venkateswara. Prof P R Naidu, Prof, Department of Chemistry, Sri Venkateswara University, Tirupati.

Earth Sciences

1. Abdul Matin. **Structure and stratigraphy of the precambrian rocks of the Sandur basin, Bellary District, Karnataka.** ISM. Prof D Mukhopadhyay, Indian School of Mines, Dhanbad and Dr Asit Kumar Roy.

2. Bhattacharya, Prosun. **Petrology and geochemistry of clastic metasediments from proterozoic Aravalli supergroup, Udaipur District, South-Central Rajasthan.** Delhi.

3. Jagannadha Rao, Siriki. **Modelling and inversion of gravity anomalies of two-dimensional bodies.** Andhra.

4. Lahiri, Tapesh. **Characterisation of the soils of the Eastern Himalayan Region together with an attempt of the separation of components of artificial and natural clay mixtures.** NBU.

5. Purnachandra Rao, Kondragunta. **Sedimentological and geochemical studies of shelf sediments off Bhimunipatnam Kalingapatnam along East Coast of India.** Andhra.

6. Ramesh, K J. **A study on certain aspects of the dynamics and energetics of Asian sammer monsoon.** IIT Delhi. Dr U C Mohanty, Centre for Atmospheric Sciences, Indian Institute of Technology, Delhi.

7. Ray, Jyotisankar. **Structure and petrology of Torappadi-igneous complex and surrounding area, Arcot District, Tamil Nadu.** Calcutta.

8. Sarkar, R K. **Stochastic inverse to optimal geosounding interpretation problems.** ISM. Prof B B Bhattacharya, Indian School of Mines, Dhanbad.

9. Sarkar, Subir. **A geo-environmental appraisal of the upper Mahananda Basin, Darjeeling Himalaya, West Bengal.** NBU.

10. Sinha, Devesh Kumar. **Late neogene planktonic foraminiferal biochronology and paleoceanography of the equatorial to cool subtrophical DSDP sites, South West Pacific.** BHU. Prof M S Srinivasan.

11. Subramanian, S K. **Structure and geomorphology of the outer Siwaliks belt between rivers Ghaggar and Yamuna from remote sensing.** ISM. Prof D Mukhopadhyay and Prof D P Rao (IIRS).

12. Suresh, T S. **Hydrogeological investigations of Hemavathy river basin in Karnataka.** Bangalore. Dr C Naganna, Department of Geology, Bangalore University, Bangalore and Dr G Srinivas, Department of Geology, Bangalore University, Bangalore.

13. Varma, Karnayana Umamaheswara. **Recent ostracoda of the Tekkali Creek, East Coast of India.** Andhra.

14. Venkata Ravi Prasad, Maddi. **Some aspects of ocean-atmosphere interactions over North Indian Ocean.** Andhra.

15. Virupakshi, P. **Petrology and geochemistry of the gneisses and associated supracrustals of Halagur Satnur and Sivasamudram area of Southern Karantaka, India.** Bangalore. Dr B Mahabaleswar, Chairman, Department of Geology, Bangalore University, Bangalore.

Engineering & Technology

1. Abraham, Mathew. **A study of irregular combustion, misfiring and cycle-by-variation in small two stroke spark ignited engines.** Roorkee.

2. Ahuja, Ashok Kumar. **Wind effects on cylindrical cable roofs.** Roorkee.

3. Anand, Yogendra Pal. **Study of the system of management of wastes in a railway complex.** IIT Delhi. Dr N Ananthanarayana, Director Research, Research Design and Standards Organisation, Ministry of Railways, Manak Nagar, Lucknow and Dr A K Gupta, Department of Chemical Engineering, Indian Institute of Technology, Delhi.

4. Badawe, B R. **Cross sectional optimization of prestressed concrete box girder bridge superstructures.** Roorkee.

5. Chatterjee, Shaibal Kumar. **Microprocessor based overcurrent protection of DC drives.** ISM. Shri P K Ramasubban, Indian School of Mines, Dhanbad.

6. Dasgupta, Kabir. **Main factors for optimum design and development of hydraulic system of heavy earth moving machines.** ISM. Prof A Chattopadhyay, Indian School of Mines, Dhanbad.

7. Desai, B T. **On line protection, operation and loading of power transformers.** Roorkee.

8. Ektessabi, Mehran Motamed. **Microprocessor based PWM inverter system and its use for control of induction motor.** IIT Delhi. Prof S S Lamba and Dr C M Bhatia, Department of Electrical Engineering, Indian Institute of Technology, New Delhi.

9. Goel, Kamlesh Kumar. **Performance of SAW inter digital transducers using scattering matrix theory.** Roorkee.

10. Jairajpuri, A M. **Investigation of mechanism of heat transfer phenomena in nucleate pool boiling.** Roorkee.

11. Jawahar, P Mannar. **Mathematical simulation for lateral dynamics of conventional and unconventional railway trucks.** IIT Delhi. Prof K N Gupta, Department of Mechanical Engineering, Indian Institute of Technology, Delhi.

12. Krishan Chand. **Water management strategies for salinity control in semi-arid environment.** Kurukshetra.

13. Mittal, Alok Prakash. **Some aspects of the effect of DC offset voltage control on natural commutated cycloconverter.** IIT Delhi. Dr J K Chatterjee, Department of Electrical Engineering, Indian Insitute of Technology, New Delhi.

14. Nath, Sumeer Kumar. **Influence of intercritical annealing on the mechanical properties of plain carbon dual phase steels.** Roorkee.

15. Parabrahmachary, Samanthapudi. **A theoretical analysis of the conjugate problems of condensation on stationary and rotating fins with possible application in the design of heat pipes and thermosyphones.** Andhra.

16. Patel, Mulchandbhai. **Human resource development in the midst of changing technologies in Indian cement industry.** IIT Delhi. Dr J M Mahajan and Dr U R K Rao, Department of Mechanical Engineering, Indian Institute of Technology, Delhi.

17. Prasad, E V. **On some design aspects of interconnection networks for tightly coupled multiprocessor systems.** Roorkee.

18. Prasad, M M. **Material characteristics of concrete in marine environment.** Roorkee.

19. Rajender Prasad. **Analysis and design of control systems using reduced order models.** Roorkee.

20. Ray, Amiya Kumar. **Studies in short tube multiple effect sugarcane juice evaporators.** Roorkee.

21. Sadiwala, Chandra Mohan. **Analysis of multilevel situations in material requirement planning.** Roorkee.

22. Sehgal, Vijay Kumar. **Behaviour of ferrocement box girder elements.** Roorkee.

23. Seshadri, Nandini. **Regulation of an anaerobic mixed acid fermentation to accumulate propionic acid.** IIT Delhi. Prof S N Mukhopadhyay, Biochemical Engineering Research Centre, Indian Institute of Technology, Delhi.

24. Shandilya, A M. **Emergency state identification and operation of power systems.** Roorkee.

25. Singh, Awadesh Pratap. **Kinetic studies of desulfurization of mineral oils.** BHU. Prof P C Singh.

26. Singh, Pramod Kumar. **Static analysis and optimization of cable-stayed bridges.** BHU. Dr T P Agrawal.

27. Sinha, S N. **Stability analysis and optimization of a multibed quench reactor for ammonia synthesis.** Roorkee.

28. Sreekrishnan, T R. **Operational characteristics of fluidized bed reactors for anaerobic process.** IIT Delhi. Dr P Ghosh and Dr K B Ramachandran, Biochemical Engineering Research Centre, Indian Insitute of Technology, Delhi.

29. Srivastava, M C. **Characterization of In Ga AsP superlattice systems using rocking curve simulation.** Roorkee.

30. Vasan, Rudra Mani. **Investigations on steel fibre concrete pavements.** Roorkee.

31. Venkataseshaiah, P. **Optimum thermal design of buildings with special reference to energy conservation.** Roorkee.

CLASSIFIED ADVERTISEMENTS

S.N.D.T. WOMEN'S UNIVERSITY

1, N.T. Road, Bombay-20

Advertisement No.26 **December 3, 1990**

Applications are invited for the following post to be filled in at P.V.D.T. College of Education, Bombay-20 in the prescribed form only available on the payment of Rs. 25/- (Non-vacational) by M.O./Cash on only working day, so as to reach the undersigned on or before fifteen days from the date of its advertisement.

Sr. No.	Name of the post & Department	Total post	Revised scale
1.	Principal– P.V.D.T. College of Education, Bombay-20	1	Rs. 3700-125-4950-150-5700 + admissible allowances

Note: (1) Principal not fulfilling the condition of experience will draw pay in an equivalent scale of Rs.3200-100-3700-125-4700 + admissible allowances till the date he/she fulfills the condition of experience. Afterwards he/she will be held eligible for the pay scale mentioned above.

Qualification & Experience

(a) A Consistently good academic record at the Master's level with at least first or high second class or equivalent degree of a foreign University, preferably in a subject under education.

(b) At least 10 years experience of teaching and/or research, in College of Education. The condition of experience may be relaxed in case of persons with higher research qualifications or other conditions the selection committee may find adequate.

(c) Preference will be given to those candidates with Doctor's Degree in Education or research work of an equally high standard in one of the subjects under Education.

(d) Administrative experience in institutions of higher learning.

General Note :

(1) Only suitable candidates will be called for interview.

(2) Scheduled Castes/Tribes and other Nomadic Tribes Candidates will be given consideration as per the Government Directives.

(3) Proficiency in Marathi/Gujarati essential, besides fluency in English.

(4) Higher starting salary may be considered in exceptional cases, if recommended by the Selection Committee.

(5) Accommodation on campus is available.

Dr.A.G. Bhalwankar
REGISTRAR

S.N.D.T. WOMEN'S UNIVERSITY

1, N.T. Road. Bombay-20
Advertisement No.29
December 3, 1990

Applications are invited for the following teaching posts to be filled in at Dept. of Computer Science, SNDT Women's University, Bombay-49 in the prescribed form only available at University office, Bombay-20 on an advance payment of Rs.25/-(Teaching) by M.O./Cash on any working day so as to reach the undersigned on or before fifteen days from the date of its advertisement.

1. Professor in Computer Science – 1 post (Temporary)
2. Reader in Computer Science – 2 Posts (Temporary)
3. Lecturer in Computer Science – 3 Posts (Temporary)

Qualifications, experience and salary scale of post of Professor, Reader and Lecturer are as follows:-

1. Professor

(i) Ph D with First class Bachelor or Master's degree in Engineering/Technology

OR

Ph D with First class Bachelor or Master's degree in Maths/Statistics/ Physics/ Applied Physics/Electronics/Instrumentation

(ii) 10 years experience in Teaching/Industry/ Profession research out of which 5 years must be at level of Reader in the field of Computer Science or Application.

Note: Candidate from Industry/ Profession with recognition at National/International level equivalent to doctorate would also be eligible.

Salary Scale: Rs. 4500-150-5700-200-7300 + admissible allowances.

2. Reader

(i) PhD in Maths/Statistics/ Physics/ Applied Physics/ Electronics/

Instrumentation or First Class Master's degree in Engineering/Technology.

(ii) 5 years experience in Teaching/Industry/Research in field of Computer Science or Applications.

Note: Candidate from the Industry/Profession with recognised professional work equivalent to educational qualifications precribed in (i) hereabove would also be eligible if they have the educational qualification preiscribed for the post of Lecturer

Salary Scale: Rs.3700-125-4950-150-5700 + admissible allowances.

Lecturer :

(i) First class Master's Degree in Computer applications/Mathematics/Statistics/Physics/Aplied Physics/Electronics/Instrumentation/Computer Science or first class Bachelor's degree in Engineering/Technology.

Note: Knowledge of Computer Science or Computer Programming is essential.

Salary Scale : Rs.2200-75-2800-100-4000 + admissible allowances

Dr. A.G.Bhalwankar
REGISTRAR

S.N.D.T. W0MEN'S UNIVERSITY

1, N.T.Road, Bombay-20

Advertisement No. 27

December 3, 1990

Applications are invited for the following Teaching posts to be filled in at the conducted colleges of SNDT Women's University, Bombay-49 in the prescribed forms available at University Office on payment of Rs.25/- by M.O/Cash on any working day, so as to reach the undersigned on or before 15 days from the date of its advertisement.

(1) Professor in Human Development – 1 Post

(2) Reader in Extension Education – 1 Post

(3) Professor in Statistics and Economics – 1 Post

(4) Professor in Family Resource Management – 1 Post

(5) Professor in Food & Nutrition – 1 Post

(6) Reader in Communication Technology – 1 Post

(7) Reader in Computer Science – 1 Post

(8) Reader in Management Science – 1 Post

(9) Lecturer in Pharmaceutical Chemistry –1(Reserved post)

(10) Professor in Education –1 Post

Qualifications, Experience and Salary scale of the post of Professor, Reader & Lecturer are as follows:-

(1) Professor:-

Doctorate degree in relevant subject. As eminent scholar with good academic record and published work of high quality and experience of guiding research at doctoral level. 10 years of teaching experience.

Salary scale: Rs.4500-150-5700-200-7300 + admissible allowances.

(2) Reader :-

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in research, innovation in teaching method and production of teaching materials. About five years experience of teaching and/or research, eminent scholar who has contributed to relevant field of knowledge either by research or by publication.

Salary scale: Rs.3700-125-4950-150-5700 + admissible allowances.

(3)Lecturer:-

B Pharm and M Pharm Degree from any recognised University with first class can apply for this post. Experience in Synthesis and Analysis of drugs in Pharmaceuticals will be an added qualification.

Salary Scale: Rs.2200-75-2800-100-4000 + admissible allowances.

REGISTRAR

GURU GHASIDAS UNIVERSITY, BILASPUR, MP

No. 3780 /Estt/UTD/90-91 **Dated 16/10/90**

LAST DATE : 7-1-91

Applications on the prescribed Form (in seven copies) are invited from eligible candidates for the following posts in the University Teaching Departments so as to reach the undersigned on or before 7-1-91

SI.No.	Name of the Post	Subject	No.of Post	Pay scale
(1)	Professor	Hindi	1	Rs.4500-7300/-
		Forestry	1	
		English	1	
		Library Science	1	
		Criminology	1	
		Pharmacy	1	
(2)	Reader	Hindi	1	Rs. 3700-5700/-
		English	1	
		Criminology	1	
(3)	Lecturer	English	1	Rs.2200-4000/-
		Library Science	1	
		Criminology	1	
		Pharmacy	1	

Qualifications

Professor:- An eminent outstanding scholar with Doctorate in the subject having secured at least 55% at the Post-Graduate Examination and at least 50% marks in Graduate Examination with the subject applied for, from a recognised University with published work of high standard and should be actively engaged in research in the subject. Should possess at least ten years experience of teaching the subject of which five years should be as Reader or in an equivalent position together with experience of guiding research at Doctoral level.

Reader

(1) Master's Degree in the subject with at least 55% Marks and with at least 50% Marks in Graduate Examination with the subject applied for from a recognised University.

(2) A Doctoral Degree/M.Phil in the subject.

(3) Five years experience of teaching UG/PG Classes having atleast three years to these as University Lecturer or in an equivalent position.

Lecturer

(1) Master's Degree in the subject with atleast 55% Marks together with atleast 50% Marks in Graduate Examination with the subject applied for from a recognised University.

(2) A Doctoral Degree/M.Phil in the subject.

Application forms can be obtained from the University Office on payment of Rs. 10.00 or by making a written request by post to the Registrar, accompanied by a crossed postal order of Rs. 20.00 drawn in favour of the 'Registrar, Guru Ghasidas University, Bilaspur, with self addressed envelope (10" x 5").

Incomplete applications, applications not on the prescribed form, and applicants not having advertised qualifications will not be considered.

All appointments will normally be on two years probation. The age of super-annuation, the allowances and benefits of pension, gratuity, provident fund will be admissible under the rules in force from time to time.

Applicants who are in employment in Government/Semi-Government /Organisation/Educational Institute or of any Govt. Undertaking must send their application through proper channel, but advance copy should reach the University in time. No applicant shall be permitted to face the interview or shall be considered without 'No Objection Certificate' of the Department concerned.

No. T.A./D.A. will be admissible to the candidate if called for interview.

The Selection Committee may consider the case of any person in absentia. Only eligible candidates may be called for interview.

The University reserves the right to fill up or not to fill up any post advertised.

The candidates will have to produce the original documents relating to age, qualifications, experience, etc. at the time of interview.

Canvassing in any form by or on behalf of the candidate will disqualify him.

Working knowledge of Hindi will be desirable for all the posts.

Candidates who had applied for any of the posts with reference to earlier advertisement need not apply. Candidates not eligible as per qualifications need not to apply.

REGISTRAR

CIRCULAR

The Indian Council of Philosophical Research, an autonomous body, fully funded by the Government, proposes to make recruitment for two posts of Director at New Delhi and Lucknow to look after its academic and publication programmes for the promotion of study and research in the field of philosophy. The posts carry the pay scale of Rs.3700-125-4700-150-5000 plus other usual allowances, as admissible to Central Government employees. The posts will be filled by transfer on deputation for a term of three years, extendable for another term of three year in deserving cases. A teacher in a university or a researcher in any institution of higher education/research with at least 5 years of teaching experience or research and possessing a doctorate degree in philosophy is eligible for consideration. Applications with complete bio-data from interested candidates who can be spared may be forwarded by the universities/institutions to the Member- Secretary, Indian Council of Philosophical Research, 4th floor, Rajendra Bhavan, 210 Deen Dayal Upadhyaya Marg, New Delhi 110 002, before **15th January, 1991.**

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Invaluable reference for those seeking to register for a Doctoral Programme

The bibliography is classified by subjects and covers all the disciplines in which a doctoral degree is awarded by the Indian Universities. Each entry gives complete bibliographical details, viz., name of the research scholars, title of the thesis, university/institute where the research was conducted, years of registration and award of degree, availability note—whether the thesis is available in the university library/department concerned/university office and the name and complete address of the guide/supervisor.

Comprehensive and exhaustive as the bibliography is, it not only reports the research being conducted at the university centres, but also includes research work done at the institutions of national importance, like the IITs, institutions deemed to be universities, like the Indian School of Mines, CSIR Laboratories as also the research establishments connected with ICAR and ICMR.

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UNIVERSITY OF DELHI

DEPARTMENT OF COMPUTER SCIENCE

ADMISSION NOTIFICATION

FOR

'MASTER OF COMPUTER APPLICATIONS'–1991.

Applications are invited on all India basis, for admission to the 3-year Degree Course "**Master of Computer Applications(MCA),**" for the session starting from **July 15, 1991,** in the Department.

A request for the Eligibility Conditions and the prescribed Application Form for the M.C.A.Admission Test, fixed for **SUNDAY, FEBRUARY 10, 1991** and to be conducted only at Delhi University, Delhi, be addressed to **Shri K.S. Miglani, Senior Assistant (In- charge), Department Of Computer Science (Room No. 303), Arts Faculty Extension Building, University Of Delhi, Delhi-110007** along with a crossed bank draft for Rs. 10/- Payable at **State Bank of India, University Of Delhi, Delhi only** and drawn in favour of **the Registrar, University of Delhi.** A request by mail should accompany a self addressed and postage stamped (Rs.3.00)(25 cm.x17.5 cm.)envelope.

LAST DATE FOR RECEIPT OF COMPLETED APPLICATIONS IS TUESDAY, JANUARY 15, 1991.

PROF. P.S. GROVER
HEAD

DEPARTMENT OF CIVICS & POLITICS

UNIVERSITY OF BOMBAY

PH.D FELLOWSHIPS IN INTERNATIONAL RELATIONS

The Department received a grant from the Ford Foundation in support of its international relations programme. Ph.D fellowships are an important constituent of this effort to enhance research and teaching in the field. Three research fellowships on par with the UGC's Junior fellowships will be given beginning from June 1991. Preference will be given to recent M.A.'s (in or after 1986) with a consistently good academic record and high research potential. Minimum qualification required is an M.A. with high second class.

Selected candidates will receive help for typing the dissertation. Field trip within the country will also be possible in deserving cases. Continuation of the fellowship is subject to an annual review of research work done. Candidates called for interview will be paid second class train fare both ways.

Applications must be submitted in the prescribed form, which can be obtained free of charge from the Department of Civics and Politics, University of Bombay, Kalina Campus, Bombay – 400 098. Application fees of Rs. 50/- in the form of a crossed demand draft in favour of "The Registrar, University of Bombay", must accompany the duly filled form. The application fees is non refundable. Letters asking for the forms should clearly be marked "Attn: Ford Foundation Fellowships". Last date for receiving the duly filled applications is 28 February, 1991.

Bombay
Date: 19 November 1990

B. Ramesh Babu
HEAD OF THE DEPARTMENT

OPPORTUNITIES AT ASRC IN 1991

American Studies Research Centre

Hyderabad 500 007 India

AWARDS IN AMERICAN STUDIES

Twice a year the Centre considers applications, on a competitive basis, for a limited number of grants to member teachers and scholars for resident study and research. Awards fall into three categories:

(1) The **Teacher Research Grant:** supports basic research in American history, literature or social issues at the ASRC. Benefits are: (a) one round-trip second-class railfare from the grantee's home to Hyderabad, provided that the period of the grant exceeds 20 days; (b) travel allowance of Rs. 50 per diem calculated to the nearest quarter-day and (c) a per diem of Rs. 50 for each day at the Centre. Such grants are awarded for periods of three to eight weeks.

(2) The **Teacher Study Grant** supports young scholars or teachers who wish to come to the Centre to read intensively on some aspect of American literature, society or history, either in preparation for research at the doctoral level or to strengthen teaching about US related subjects. Teacher Study Grants provide the same benefits as Teacher Research grants.

(3) **Middle Awards** support scholars who have had their PhDs for five years or more and have demonstrated evidence of continuing scholarly activity. Benefits are:(a) one round-trip first-class railfare from the grantee's home to Hyderabad, provided that the grant period exceeds 20 days; (b) travel allowance of Rs. 75 per diem calculated to the nearest quarter-day; and (c) a per diem of Rs. 75 for each day spent at the Centre.

Deadlines for applications each year are 15 February for summer grants and 15 July for winter grants.

Besides these awards, the ASRC brings several senior scholars in a variety of disciplines to the Centre each year as **Scholars-in- Residence**, both to pursue their own advanced research and to counsel Teacher Study and Teacher Research grantees. The Scholar-in-Residence Award is by invitation only.

Grants-in-Aid to successful doctoral/MPhil/MLitt candidates in American literature, history or society, who supply the ASRC with a copy of their work for inclusion in the Centre's library collection, help defray part of the costs incurred in the preparation of dissertations or theses (copying, typing, etc). Such a grant - Rs. 200 for MPhil/MLitt theses and Rs. 300 for PhD dissertations - cannot be used to pay any fee charged by the candidate's institution. There is no deadline for Grants-in-Aid applications.

AMERICAN CIVILIZATION COURSES

Course VII: 4 February – 2 March 1991

Course VIII: 29 July – 26 August 1991

The ASRC will offer two survey courses of four weeks duration on American Civilization for the benefit of junior scholars of American Studies. The content of this course is roughly equivalent to the predoctoral program given in some Indian Universities. It provides an interdisciplinary survey of American history, society, thought literature, politics, and institutions from the colonial period to the present day. The course is taught by experienced faculty, both South Asian and American.

Participants in the course are required to write term papers on selected topics, to prepare bibliographies as part of their training in research methodology, and to take written and oral tests. Grades are given at the end of the course based on cumulative performance in various examinations. A certificate is given to each successful participant. Several prizes are awarded for outstanding performances in the course.

The aim of this interdisciplinary course is to convene scholars from several disciplines under the broad rubric of American Studies so that each discipline illuminates the others while several disciplines together contribute to a well-grounded understanding of the richness and complexity of American Civilization.

Persons teaching American subjects in colleges and universities and scholars registered or planning to register for MPhil/PhD degrees in the Humanities, History, Literature or the Social Sciences in South Asian universities are eligible to apply for participation in these courses. ASRC Provides food and accommodation at its hostel (for outstation participants on double occupancy basis). Candidates selected for the course are expected to finance their own travel to Hyderabad. Those without institutional grants or fellowships may apply for travel assistance from ASRC. Enrolment is limited to 25 participants in each course.

Application form is sent on request. Applications for Course VII must reach the Centre by 31 December, 1990 and for Course VIII by 15 June, 1991.

Dr. M Glen Johnson

Director

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University News

MONDAY, DECEMBER 24, 1990 Rs. 2.50

10 JAN
[illegible] MYSORE

The Triad of Education in India

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Financing of Higher Education in Uttar Pradesh

●

Emerging Areas of Research on Audio-Visual Education

●

Workshop on Pilgrimage Traditions

●

Award for Teacher Educators

●

Master's Programme in Management

BHARATHIAR UNIVERSITY

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ANNOUNCES

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ADMISSION PROCEDURE

Admission will be made on the basis of a written test, past academic performance, Group discussion and personal interview. Written test will be held at Coimbatore, on Sunday the 24th March, 1991. The successful shortlisted candidates will be called for the group discussion and personal interview at Coimbatore, during June 1991.

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HOW TO APPLY

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REGISTRAR

10 JAN
MYSORE

UNIVERSITY
NEWS

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Editor :
SUTINDER SINGH

The Triad of Education in India

D.A. Ghanchi*

Introduction

Education in India, both as a concept and as a system, has evolved over the years through a dynamic ecelectic process which has, on the one hand, sought to preserve the core ingredients of the ancient cultural heritage of the country, and, on the other, has striven to incorporate elements of change from time to time.

Naturally, such a two-fold process cannot be free from tensions, for people's perceptions of the indigenous culture are likely to be different, particularly in view of the numerous diversities in the country with particularities of regions, religions, beliefs, languages, life-styles etc. Add to these the people's perceptions of the present and the future, and we can realize that the process of integrating the old and the new can never be free from the pulls and counter-pulls of tensions.

This is why perhaps the vision of a national concept and a national system of education has eluded us all these years. This need not, however, dishearten us from pursuing the goal, albeit with an appropriate appreciation of the forces that everywhere in the world go to shape education as a concept and as a system. These forces constitute a triad of politics, ethics and aesthetics. It is on this triad that education as a philosophical notion and as a practical, man-making enterprise rests.

The Triad

Education has been recognised as a pro-humankind activity. It draws its sustenance from the human society, and simultaneously it shapes that society. This mutuality of relationship makes education a collaborative public activity involving individuals and agencies to play their roles in a number of ways, like by participating in shaping the policy of education, in implementing it, in monitoring and evaluating it, by providing it a variety of resources, by doing a rigorous social audit, by suggesting new directions to be explored and even by actively engaging in the operational part of education.

This is the broad spectrum of 'politics' that is one of the three pillars of education. It implies that everyone in a community has a stake in education, and that everyone is duty-bound to own that stake, to carry it out, to be a partner in the process, and to share its successes and failures.

Whenever and wherever such open, positive, and participative politics supports and sustains education, it flowers, it contributes to the integration between people and education and, consequently, there is an all round development both of individuals and of society. And conversely, when politics degenerates into an anti-people activity through authoritarianism, corruption, and manipulation, education as a concept and as a system, stands exposed to threats to its integrity, its commitments, its purposes, its justification, and its very existence as a pro-people enterprise.

Ethics as the second pillar of education provides the concept its elan vital, and the system its moral moorings. It imparts value and worth to education, and, thereby, makes it one of the noblest pursuits and missions of the humankind whose passionate yearning has always been to be the choicest race on earth through not only material progress but also moral and spiritual elevation by education.

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*Pro-Vice-Chancellor, North Gujarat University, Patan (N.G.)

All sound education – formal, non-formal or informal – is rooted in a comprehensive moral ethos that provides a frame of reference to all connected with education, directly or indirectly, to inform their modes of behaviour and relationships, to judge their thoughts and actions, to evaluate their plans and performances, and, thereby, to arrive at axiological decisions on issues of life ranging from porsonal to global.

The third member of the triad, *viz.* aesthetics constitutes that finer side of life that makes it a thing of beauty and joy for ever. T.S.Eliot has sung of this true measure of man's life thus:

"To do the useful thing
To say the courageous thing,
And to contemplate the beautiful thing,
That is enough for one man's life."

All humanistic education, both conceptually and systematically, tries to help the educand to continue to strive to approximate to that measure and develop the qualities of heart that, amidst all the barrenness, crudities and cussedness of the mundane life, endow him with a receptive and sensitive soul. Didn't William Wordsworth expect this of his fellow-beings?

" Enough of science and arts,
Close up these barren leaves,
Come forth and bring with you a heart
That watches and receives. "

Such heart is sought to be fashioned by education that is soaked in humaneness, in beauty and in goodness.

It is this triad on which rests the edifice of education. The stability, health and vitality of the latter depends upon the strength, steadfastness and vigour of the former. When the triad gets shaky for any reason, tremors are felt all over the edifice. It may take various forms – philosophical disorientations, confusion of beliefs, dysfunctionality of the various subsystems, distortions in relationships and, God forbidding, even the ultimate disintegration of the system.

All communities that aim at providing sound education to their younger generation see to it that an imaginatively designed, closely coordinated and continually renovated triad supports its educational enterprise, philosophically and operationally. There is no reason why India should be an exception to this. In fact, it hasn't been so although there is a world of difference in the quality of Indian experience in the past as well as in the present.

The Pre-independence Experience

Before the advent of freedom education in India had a narrow conceptual perspective. It had to minister to the needs of a colonial power which sought to perpetuate its absolute rule in the country with the sole aim of exploiting its economic resources to the benefit of the home country, namely, England. Their educational agenda, therefore, deliberately excluded from its purview every possibility that could lead to the building up of individuals with a full-grown personality who would be productive citizens of a free and flourishing nation. If at all it had any transformative function, it amounted to an aberration inasmuch as it sought to deindigenise its recipients by flouting all the norms of ethics and aesthetics. In no uncertain terms did Macaulay propound the aims of British education in India thus: "Through Western education the Indians...will be Indian in blood and colour, but English in tastes, in morals, and in intellect". The triad of education in India under the British was, thus, so distorted as to make education an outlandish phenomenon.

A series of attempts was, however, made during the last decades of the 19th century and the first quarter of the 20th century to evolve a Pro-people concept of nationalistic education, and initiatives were undertaken to build up systems and structures by leaders like Bal Gangadhar Tilak, Mahatma Gandhi, Pandit Madan Mohan Malavia, Sir Syed Ahmedkhan and others of their ilk. They tried to rebuild the triad of education as a result of which there emerged islands of excellent nationalistic education in different parts of the country. These centres turned out bands of freedom fighters, social workers, and leaders in different spheres of national life. It was largely this reservoir of manpower that undertook the onerous task of managing the polity and reconstructing the economy of the country when the British rule was wound up.

The Triad in Free India

With the attainment of freedom, India entered a new era of development and change. It acquired a distinct national identity emancipated from the inhibitions of the alien political domination. Politically, the country adopted a democratic, republican constitution based on the principles of liberty, equality and justice. Secularism and socialism were made the cornerstones of the polity.

The constitution of the country was so framed as to epitomise the aspirations, the dreams, the convictions and the commitments of the people of India to be a modern, progressive and egalitarian nation.

Through the proclamation in its preamble, the guarantee of the fundamental rights, the elaborate enunciation of the directive principles of the state policy and the advocation of the fundamental duties of the citizen, the constitution provides the brick and mortar for constructing the triad for India's education. The history of Indian education in the post-freedom period bears testimony to the efforts made towards building up this triad and the superstructure of education on it.

Political and administrative measures to ensure autonomy, freedom of decision making and action, decentralization of authority and participation at all levels of managing the affairs of the people were taken. This encouraged a fast and multifarious growth of education in the country by involving non-government, voluntary organisations wedded to the cause of education. The first two decades of free India therefore showed what could be achieved in the field of a developmental activity like education in a pro-people political dispensation.

The ethical and aesthetical components of the triad got redesigned and strengthened by the philosophical visions propounded chiefly by the Radhakrishnan Commission (1948-49), the Mudaliar Commission (1953-54), the Kothari Commission (1964-66), the promulgations of National Policy on Education (1968 and 1986), and the Programme of Action (1986). These visions have been translated into actual programmes in the form of policy frames like the three-language formula, of structures like the UGC, the IGNOU etc., of initiatives like the Operation Blackboard, of experiments like the core curriculum and value education, and of innovations like the autonomous college.

All these, and many more, signify a clear visualization on our part of the form, composition and strength of the triad and the genuine will, commitment and dedication to keep it intact and operative to support the body organic of education. So long as these conditions were fulfilled honestly and whole-heartedly, education in free India scaled not a few peaks of excellence in the areas of conception, curriculum, instruction, learning resources, innovations, research, extension, administration and societal involvement.

However, there have also been not a few dents into the triad since the onset of seventies, and by the time we are on the threshold of the nineties, the inroads have assumed serious proportions.

The Triad in Trouble

The noble art of politics, which Pericles used to extol as a healthful, development-oriented, participative, pro-people activity, has unfortunately been a helpless victim of forces of authoritarianism, of parochialism of all brands – regional, religious, ethnic, casteic, linguistic – of criminalisation, of manipulative games, and of corruption.

In fact, of late politics has been gradually deformed into a wily craft of intrigue, of double-speak, of violence and of brazen selfishness. And the practice of this craft has no longer remained the exclusive privilege of the professional politician. The practitioners verily include the academicians and administrators of all hues and colours, students and their guardians, employees and their trade unions, for everybody is in the rat race for power, and for a quick gain.

The consequences are there for all to see. Ethics and aesthetics are given a go in the senate halls, and committee rooms, in the teachers' chambers and classrooms, in the faculty conclaves and trade union conferences, in examination halls and interview cabins. They have been rooted out from processes of admission and appointment. They have also been ruthlessly banished from the processes of establishing educational institutions ranging from a KG nursery to a university, and also appointing their functionaries.

They have also been cast away from the sphere of human relations between the community and educational institutions, between students and teachers, between administrators and the personnel. Cheating in examinations, subversion of academic schedules, disruption of institutional climate, politicisation of every organisation of the system, disregard for the rule of law, let alone the moral code of decent, human behaviour, and misuse of power and resources for ulterior purposes are but a few, visible distortions that have shaken the triad of education to its very core. Naturally, the resultant tremors that constantly rock the edifice of education rob it of its vital, life-sustaining chemicals of orderliness, cohesion and functional wellness. It now seems that the system is not at peace with itself nor does it offer the much needed moral and spiritual, let alone psychological and material, ballast to the troubled soul of its client, the student. Don't we, therefore, find him falling an easy prey to those who instigate him to self-immolate, to take to drug addiction, to join the gangs of vandals, rowdies and arsonists? This is a dangerous fall-out of the catastrophe that has overtaken education whose triadal foundation has been shaken so rudely.

A Therapy

We can permit this situation to continue only at the increasing peril to the system of education. Hence, it is advisable to adopt an appropriate therapy to remedy the situation. A 3-SET therapy is recommended for the purpose. It will require us to act as follows.

(i) S-1 : To salvage and save selectively all those elements that are vital to the triad.

(ii) S-2 : To streamline them by treating the diseased as well as the dysfunctioning parts and by reinvigorating the whole.

(iii) S-3 : To stabilise and strengthen the sub-components of the triad and, thereby, put the whole triad back on its rails.

(iv) E : To evolve through experimentation, innovation and research newer patterns, practices, ideologies and attitudes in the three areas of the triad in tune with concurrent developments and change in the country and the world at large.

(v) T : To thrust forward to make the process of recurrent revitalization of the concept and the system of education an on- going, regular feature of academic as well as national life and, thereby, forestall any possibility of a relapse into the moribund state which has been a historical reality for us.

A note of caution. No therapy can prove effective unless it is tried out with promptness and a sense of commitment. Let's plan the strategy and start acting now, remembering what Dr. Albert Schweitzer emphatically said, "As for the right time to act, the time inevitably is now. It can only be now. Truth has no special time of its own! When circumstances seem least propitious, that is the correct time. " Dr. Schweitzer seemed to sound precisely prognostic about the Indian educational scene of the nineties, of course without any direct conscious deliberation to that end.

It requires bold and committed attack on our part because all the three pillars of the triad belong to very sensitive areas of politics which is highly volatile and dominating, ethics which has had considerable bashing from all quarters, and aesthetics about which we have had a poor track record particularly since we became independent. We need a grim determination to make an impact with a thrust on the malady. To quote the late Prof. C.V.Raman, "What we need in India today is the destruction of the deafitist spirit. We need a spirit of victory, a spirit that will carry us on, too, " a spirit of forward thrust for a good cause.

Action Strategy

The 3-SET therapy should be applied through a well-designed strategy of action. At least three levels of action can be identified as under :

(i) The grassroot level : This pertains to individual institutions, viz. schools, colleges and universities where initiatives can be taken relatively easily, and where the impact would be visible rather very soon.

(ii) The middle level : This refers to states' and union territories' level. There are many conglomerates of agencies at this level. A lot of coordination would be required to implement the therapy at this level.

(iii) The apex level : This is the national level involving the union government and numerous central authorities. This is the most difficult level to handle in view of the competitive diversities, contradictory pulls and incompatible angles of thinking and behaving found active since the dawn of freedom.

At every level, components and sub-components of the three pillars of the triad should be identified and then listed in a hierarchy of their importance as well as the state of their health. It would be advisable to adopt a phased programme of administering the therapy to the most crucial and yet manageable components first. For example, one of the sub-components of the pillar of politics is a free and responsible expression of thought which includes honest dissent, too. We can introduce this at the grassroot level by adopting student-directed teaching-learning methods in classrooms, for the micropolitics of the classroom is amenable to a motivating and sympathetic treatment by an understanding teacher. Gradually this therapy can be extended to other areas of participatory work involving students, teachers, principals and even the vice-chancellor. The areas may pertain to admission of students, curriculum, instruction, evaluation, students' union activities, employees' selection, promotion and punishment, union activities, etc.

In short, through appropriate interventions by the 3-SET therapy, pro-people politics would gradually begin to form and seep into the various organs of the system, and, thereby, inductively lead to the formation of a positive philosophy of education based on the political values of freedom, accountability, and social audit.

Conclusion

The concept of the triad of education, thus, constitutes the core of education, a vital process of making men and women that should build up a human race whose sense of political awareness and accountability should ensure a progressive, and open world order, whose moral sensitivity should guarantee every man and woman personal sanctity as well as social justification, and whose aesthetic preferences should fashion a human culture which the Gods should envy. It would be an assay toward professional self-acquittal as well as personal self-fulfilment to contribute to the strengthening of the triad in our country that is passing through a very critical period of its history today. ☐

FINANCING OF HIGHER EDUCATION IN UTTAR PRADESH

Mohd. Muzammil*

Over the last few decades, the burden of financing of education is being increasingly borne by the state government. Formal education has to a large extent become a governmentally financed social service. It was and is still not uncommon to find ever mature economists lamenting upon the non-availability to education of the needed quantum of finance, as if mobilisation of funds in adequate amount was an unsurmountable problem and if once solved on a lasting basis would work to ensure the attainment of what had been eluding the policy makers and insisted upon by the experts. Indeed, in this respect and on such a plane of generality, there is not much to distinguish scholarly pronouncements from the outpourings of laymen. The question arises as to whether money is really the villain of the piece. While in an absolute sense, the answer is not only positive but a truism and valid for any activity, private or public, economists *qua* economists must not be carried away by such generalities. Scarcity is the hallmark of the peculiarly economic character of any phenomenon and scarcity makes economic sense only when it is viewed relatively. Thus, an economist's pronouncements on the link between the need and the means, and for the present purpose between higher education and the actual or potential finance for it, must necessarily be shown to have been preceded by a deeper thrust into the matter.

In other words, finance whether scarce or abundant has to be viewed in the totality of the context of private and social needs of all types and against the historical, social and institutional traditions behind best means of meeting them. It may also be thought that the expenditure aspects of higher education covered in this paper dominate over the financing aspects. This is simply because when private finance is grossly inadequate and the government is made the chief deliverer of goods what is required is the placement or higher education in the totality of major claims competing for educational finance particularly when earmarking of revenues to heads of expenditure has been historically almost totally absent.

The present paper is divided into three sections. Section I presents an analysis of the multi-source financial mechanism for higher education in the state. Section II is devoted to a detailed study of the state government's expenditure on higher education, and section III offers a revised scheme of resource mobilisation for financing higher education in the state.

I

The role of central government in financing of higher education in Uttar Pradesh has remained very limited. Thus of the total public funds devoted to higher education, the state government accounts for its overwhelming share. Private sources of finance, though accounting for a very small percentage share, can in turn be classified into the following major categories:

(i) Fees and other maintenance costs paid by the students.

(ii) Philanthropic contributions in the form of 'endowments'.

(iii) Other sources which relate to fines, special levies imposed on students and adhoc collections etc.

Contributions from different sources of finance for higher education are given in Table–1 which reveals the following:

(i) There has been a significant increase in the government's contribution to the total finance for higher education. The contribution of the government for higher education was about 24 per cent of the total in 1950-51 which increased slowly during the first two decades of planning and eventually jumped to a height of about 75 per cent of the total in 1980-81. These figures speak of the substantial and consistent increase in the contribution from the government to the finances for higher education in the state. The increase has been most remarkable in the decade of the 1970s.

(ii) Fees are the second largest source for higher education, but the relative contribution of fees has declined over time. The financial support from fees accounted for about 32 percent of the total in 1950-51. This share increased to about 42 per cent in 1960-61, eventually to decline to a level of 19 percent in 1980-81. Still, as compared to the lower

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Department of Economics, University of Lucknow, Lucknow-226007

TABLE – 1

Source-wise Financial Support to Higher Education in Uttar Pradesh

(Percentages)

Year	State Government	Local Bodies etc.	Fees	Endowments and others	Total
1950-51	24.4	--	31.6	44.0	100.0
1955-56	27.3	3.0	38.7	31.0	100.0
1960-61	26.1	3.6	41.8	28.5	100.0
1965-66	43.3	6.7	32.3	17.7	100.0
1970-71	36.7	5.9	38.7	18.7	100.0
1975-76	60.4	3.7	25.1	10.8	100.0
1980-81	73.6	3.5	18.6	4.3	100.0

Source : Calculated on the basis of data collected from the (i) Directorate of Education, Government of Uttar Pradesh (ii) Annual Budgets, Government of Uttar Pradesh

levels of education in the state, the contribution of fees in total educational finance is the highest at the higher education level.

(iii) The contribution of other governmental agencies (local bodies etc.) has been very small in the total educational finance for higher education.

(iv) The contribution from endowments and other sources taken together has been very significant at the time of the beginning of the planning period as is evident from the fact that 44 per cent of the total finance for higher education 1950-51 came from these sources. But their contribution has gradually declined over the period under study. It has gone down from 44 percent to about 4 percent of the total in 1980-81.

Looking at the relative roles of public and private sources of finance for higher education which are given in Table–2, we find that the share of public sources has gone up from less than one-fourth to more than three-fourth over the three decade period under review. By the same token, the exact reverse is true in case of the contribution from private sources. However, the feature needs emphasis that the share of private sources of finance is the largest for higher education as compared to any other educational level in the state.

TABLE - 2

Relative Roles of Public and Private Finance in Higher Education in Uttar Pradesh

(Percentages)

Year	Public Sources	Private Sources	Total
1950-51	24	76	100
1955-56	30	70	100
1960-61	29	71	100
1965-66	50	50	100
1970-71	43	57	100
1975-76	64	36	100
1980-81	77	23	100

Source : Same as in Table-1.

Of the public sources of finance, the contribution from the central government, as mentioned above has been very limited. Of the central transfers for education in the state, non-plan educational grants, more often than not account for the largest share.

II

In the Constitutional scheme of division of functions between the centre and the states, education is a subject allotted to states. The major responsibility for the development of education, therefore lies on the shoulders of the state government. This is true for all levels/sectors of education. There has been a phenomenal increase in the rate of educational advancement in the state during the planning period and consequently educational expenditure of the state government has increased much faster than the increase in State Domestic Product or the total budgetary expenditure. This section examines at length the capacity and effort of the state government to spend on higher education. This analysis aims at finding out the state's ability and endeavour to invest in this significant domain of human resource development. Patterns and emerging trends of public expenditure on higher education in the state have also been inquired into in detail.

To begin with the aim is to find out the relative rates of growth in the four variables of State Domestic Product, State's Budgetary Expenditure, Total Educational Expenditure and Higher Educational Expenditure. Obviously if the rate of increase in the third variable is found to be faster than the increase in either of the first two, particularly the second, the situation would be approximating an ideal. This is because an increase in higher educational expenditure can be expected to occur following an increase in total educational expenditure. All these variables are quantified in Table-3.

TABLE - 3

Compound Annual Growth Rates of State Domestic Product, State's Budgetary Expenditure, Total Educational Expenditure and Higher Educational Expenditure

(Percentages)

Period	State Domestic Product		State's Total Budgetary Expenditure		Total Educational Expenditure		Higher Educational Expenditure	
	X	Y	X	Y	X	Y	X	Y
1950-51 to 1960-61	1.3	0.8	10.9	9.1	9.6	8.0	7.9	6.3
1960-61 to 1970-71	8.7	2.4	11.1	5.3	15.4	9.4	16.9	10.9
1970-71 to 1980-81	12.7	4.0	15.2	4.9	19.2	6.0	19.5	8.6
1950-51 to 1980-81	7.4	2.3	12.4	6.4	13.9	7.7	14.7	8.6

Notes : X : at current prices Y : at constant (1970-71) prices

Source : Calculated on the basis of figures given in annual Budgets of Uttar Pradesh.

As can be seen from Table-3, that so far as the compound annual growth rates of these four variables are concerned, we find, both at current and constant prices, a very moderate increase in State Domestic Product (State Income), a little faster in total budgetary expenditure, remarkably faster in total educational expenditure and still faster (fastest of the four variables) in higher educational expenditure. This indicates a consistent effort from the side of the state government to spend on higher education in spite of the fact that state income and total budgetary expenditure grew slowly.

The share of expenditure on higher education as per cent of total education budget of the state, has been more or less constant for the entire period under study. As can be seen from Table-4 (on next page), its share was 8.0 per cent in 1950-51 and 9.9 per cent in 1980-81. It never exceeded 10 per cent of the total educational budget of the state government. The claim of higher education on total state budget has gone up from 1.10 percent in 1950-51 to 2.00 percent in 1980- 81. Public expenditure on higher education as percent of State Domestic Product which was 0.04 in 1950-51 has gone up to 0.25 in 1980-81. These figures speak for themselves that in spite of capacity constraint, the state government has made positive efforts for financing higher education in the State. A deeper inquiry into the budget literature or the state government reveals that most of the expenditure on higher education in recent years is of non-plan type to the details of which we shall turn later.

TABLE - 4

Share of Expenditure on Higher Education in State Domestic Product, Total Budgetary Expenditure and total Educational Expenditure

(Percentages)

Year	Expenditure on Higher Education as percent of Total Educational Expenditure	Expenditure on Higher Education as percent of Budgetary Expenditure	Expenditure on Higher Education as percent of State Domestic Product
1950-51	8.0	1.10	0.04
1955-56	9.7	1.18	0.07
1960-61	6.9	0.85	0.07
1965-66	9.7	1.67	0.15
1970-71	7.8	1.40	0.14
1975-76	8.1	2.02	0.23
1980-81	9.9	2.00	0.25

Source : Same as in Table 3.

The growth of public expenditure on higher education is given in Table-5 which shows that total expenditure on this level was only Rs. 57 lakhs in 1950-51 which increased to Rs. 1.22 crores in 1960-61. It went up to Rs. 5.81 crores in 1970-71 and eventually to Rs. 34.39 crores in 1980-81. The over all growth rate at current prices has been 14.7 percent per annum for the period 1950-51 to 1980-81. In terms of constant prices, the compound annual growth rate has been 8.6 percent over the same period. It may be noted that the highest growth rate was recorded in the decade of 1970s.

TABLE-5

Growth of Expenditure on Higher Education

(Rs in lakhs)

Year	Expenditure on Higher Education at Current Prices	Index of Growth	Expenditure on Higher Education at Constant (1970-71) Prices	Inedex of Growth
1950-51	57	100	113	100
1955-56	99	174	229	203
1960-61	122	214	207	183
1965-66	434	761	564	499
1970-71	581	1019	581	514
1975-76	1642	2881	494	840
1980-81	3439	6033	1336	1182

Compound Annual Growth Rates (Percentages)

Period	at current prices	at constant prices
1950-51 – 1960-61	7.9	6.3
1960-61 – 1970-71	16.9	10.9
1970-71 – 1980-81	19.5	8.6
1950-51 – 1980-81	14.7	8.6

Source : same as in Table 3.

The break-up of expenditure on higher education into plan and non-plan categories is given in Table-6. Plan expenditure on higher education has only slightly increased in absolute terms over the period shown in the Table. It has gone up from Rs 2.09 crores in 1965-66 to Rs 2.51 crores in 1980-81. However, the share of plan expenditure on higher education expenditure on this level has declined from 48.2 in 1965-66 to 7.3 in 1980-81. While on the other hand non-plan expenditure on higher education has increased both in absolute and in relative terms. It has gone up from Rs. 2.25 crores in 1965-66 to Rs. 31.88 crores in 1980-81 and simultaneously its share in total expenditure has increased from 51.8 percent in 1965-66 to 92.7 percent in 1980-81.

TABLE 6

Plan and non-plan expenditure on Higher Education

(Rs in lakhs)

Year	Plan Expenditure	Index 1965-66=100	non-Plan Expenditure	Index 1965-66=100	Total Expenditure	Index 1965-66=100
1950-51	..	..	..	..	57	13
1955-56	..	..	..	..	99	23
1960-61	..	..	..	..	122	28
1965-66	209 (48.2)	100	225 (51.8)	100	434 (100.0)	100
1970-71	89 (15.3)	43	492 (84.7)	219	581 (100.0)	134
1975-76	103 (6.3)	49	1539 (93.7)	684	1642 (100.0)	378
1980-81	251 (7.3)	120	3188 (92.7)	1416	3439 (100.0)	792

Notes : (i) Figures in brackets show the percentages

(ii) The break-up of plan and non-plan expenditure is not available before 1965-66

Source : as cited in Table – 3.

There are three important heads of expenditure on higher education, *viz.* (i) Grants to Universities, (ii) Government Degree Colleges, and (iii) Grants to non-Government Degree Colleges. Of these three, the last item alone claims more than three-fourths of the total budget for higher education. As can be seen from Table-7, grants to universities have gone up from Rs 34 lakhs in 1950-51 to Rs 3.40 crores in 1980-81. Expenditure on Government Degree Colleges have gone up very rapidly from Rs 4 lakhs to Rs 1.87 crores over the same period. Grants to non- Government Degree Colleges have gone up very sharply from Rs 18 lakhs in 1950-51 to Rs 26.55 crores in 1980-81. The compound annual growth rates for the above three heads over the thirty year period have worked out to be 8.8 percent, 13.7 percent and 18.5 percent respectively. It is evident that privately managed degree colleges are being increasingly financed in larger amounts by the state government. The rate of growth of expenditure on Government Degree Colleges is relatively slower and that of universities still slower. The mushroom growth of privately managed degree colleges in the state has claimed bulk of the resources earmarked for higher education.

The share of grants to universities as is evident from Table-7 has declined from 59.6 percent of the total higher education budget in 1950-51 to 12.5 percent of the total in 1980-81. Similarly the share of Government Degree Colleges has declined from 7.0 percent in 1950-51 to 5.5 percent in 1980-81. On the other hand, the share of grants to non-Government Degree Colleges has increased very rapidly from 28.1 percent in 1950-51 to 77.2 percent in 1980-81.

III

Findings in sections I and II of this paper suggest that in view of the declining share of private finance and an ever increasing role of government in financing higher education in the state, there emerges a strong case for enhancing the share of private finance in higher education. This is needed in view of the earnings differentials that education creates between its recipients and non-recipients. Therefore a substantial increase in students fees at the higher education is urgently called for.

An across the board increase of 50 percent in fees in higher education will raise the share of fees in total higher education finance from the present level of about

TABLE - 7

Expenditure on Different Constituents of Higher Education

(Rs in lakhs)

Year	Grants to Universities	Government Degree Colleges	Grants to non-Govt. Degree Colleges	Others	Total On Higher Education
1950-51	34 (59.6)	4 (7.0)	16 (28.1)	3 (5.3)	57 (100.0)
1055-56	39 (39.4)	11 (11.1)	39 (39.4)	10 (10.1)	99 (100.0)
1960-61	44 (36.0)	9 (7.4)	59 (48.4)	10 (8.2)	122 (100.0)
1965-66	228 (52.2)	17 (3.9)	163 (37.6)	26 (6.0)	434 (100.0)
1970-71	180 (31.0)	29 (5.0)	340 (58.5)	32 (5.5)	581 (100.0)
1975-76	474 (28.9)	43 (2.6)	1024 (62.4)	101 (6.1)	1642 (100.0)
1980-81	430 (12.2)	187 (5.5)	2655 (77.2)	167 (5.1)	3439 (100.0)

Note : Figures in brackets show the percentages

Source : State Budgets

18 percent to about 26 percent. This will bring about much desired relief to the finance starving institutions of higher learning. It needs political will and courage on the part of the state government to implement this suggestion. Increase in fees in higher educational institutions is long over-due. In order to help poor and deserving students the schemes of freeshops, scholarships and fellowships be made more effective, to ensure equality of opportunity to higher education.

Since the share of endowments and other philanthropic contribution is also declining over time, efforts should be made to invite the attention of potential donors for providing voluntary financial support to institutions of higher learning. Alumuni should also be approached by their parent institutions to donate voluntarily.

Since about 80 percent of the total higher education budget is utilised for payment of salaries to teaching staff, a very small amount is left to be spent on equipments and libraries etc. This calls for increasing the capital expenditure on higher education so that qualitative reforms can easily be brought about. Ninetythree percent of the total higher education expenditure being of non-plan nature itself gives an evidence of overwhelming proportion of non-developmental expenditure.

Central government grants should be increased for state universities because it is the responsibility of the central government to secure equalisation of educational development in different states of the country and Uttar Pradesh is a lowly placed state with respect to higher educational advancement. Above suggestions, if acted upon, will lead to an equating of the need and the means.

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Emerging Areas of Research on Audio - Visual Education

A.K. Singh*

The discipline of audio- visual research is concerned with the scientific study of systems performance and human factor in work, system control, facilities and equipment design and work environment design. Because of the diverse and complex nature of work system, audio - visual research is necessarily treated as interdisciplinary from the point of view of its orientation, methodology as well as practical application.

Conceptualizing audio - visual research functioning as a total system with its stated goals towards efficiency, improvement and excellence, this paper provides a clear perspective into its various elements, its relationship and areas of research concentration. To accomplish this, a model of audio - visual research is presented herewith.

AUDIO - VISUAL RESEARCH SUBSYSTEMS

Learners

This subsystem of audio - visual Research is important and is concerned with the various types and abilities of learners. Some of them are stated below :

Discipline

- arts, science, commerce, medical, etc.

Institutions

- colleges, universities, etc.

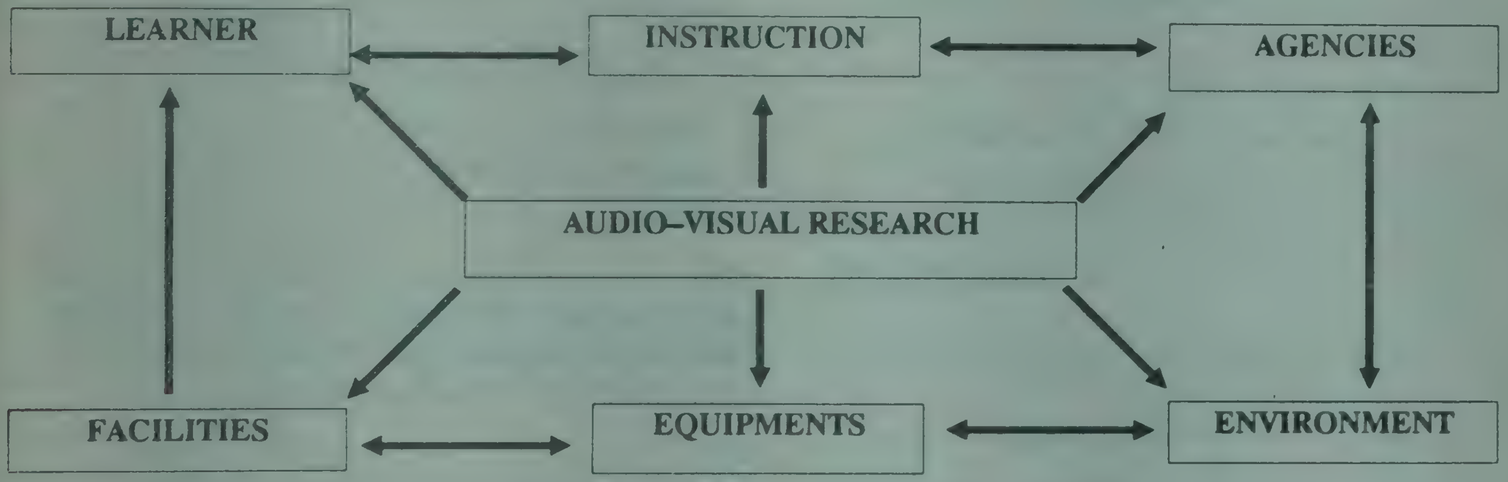

Fig. 1 : systems framework of Audio–Visual Research

For a totally efficient system of audio - visual research operation there are at least six broad components. Six contributing components namely - Learners, Instruction, Facilities, Equipments, Agencies and Environment are linked with its goals. Each of the six components contributes directly to the overall system as the first level of contribution. But at the same time, the interrelationship between the various elements will be considerable if we are to thoroughly understand the nature, functions, and inadequacies of the delivery systems, to redesign and implement this system so as to attain its objectives.

Types of Students

- normal, physically and mentally handicapped, etc.

Time

- time per day : 1, 2 or 3, hr. etc.
- weekly : twice or thrice in a week, etc.

Language and Culture

- english, hindi, regional language
- rural, urban, etc.

Student Behavior

- views alone or in a team
- quiet place or people around
- length of the view session

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- length of the rest periods
- optimal view group size
- optimal time of a day, etc.

Learning

- presentation and discussion
- only presentation
- discussion with teacher
- discussion with students, etc.
- colour contrast
- directional and vigilance activities of eye relative to the design of the materials
- angular place of material and its relation to viewer's eye movement
- distance of materials for easy viewing, etc.

Evaluation

- frequent testing
- unit test, six monthly, annual, etc.
- projects
- length of the examination session
- length of the interval between examinations
- teacher made test or standardized tests
- design of grading system
- letter grade, percentage grade, point system, pass – fail, etc.
- content of evaluation- examination, personal knowledge of students, etc.
- teacher's reliability in easy grading
- single grader or multiple grader
- time of feedback on results.
- grading and pupils motivation
- discussing the test with students, etc.

Instruction

This subsystem of audio-visual research is concerned with those aspects that have to do with efficient delivery, presentation or communication of knowledge and information to the students, etc. Its scope can be broadened by including more areas of research and development, such as,

- curriculum
- content analysis
- theory and design of visual communication
- use of graphics and colours
- design for concentration, attention and comprehension
- design for learners participation through variety
- design of titles, captions, etc.
- a design to arouse interest and attention
- experimental comprehension of systems learning effectiveness
- comparison between verbal and nonverbal communication
- clarity, distance, location
- programming of films
- special training
- comparison to traditional methods
- for remote areas, cities, etc.

Script

- author script, camera script, etc.
- per minute words
- per programme words
- length of the programme
- medium of instruction
- speed of presentation, etc.

Areas

- colleges, university subjects
- social problems/needs
- greatman's life, etc.

Facilities

This portion of audio - visual research is concerned with the various facilities that are supportive but have critical role in enhancing the quality and efficiency of instructional delivery and learning success.

Library

- space of library
- design of study tables
- space, convenience
- cataloguing system
- indexing factor
- design forms, display, guidance signs, etc.
- video library, etc.

Laboratory

- physical layout of equipment placement
- accessibility of equipment and material
- sequencing of week activities and design of work stations
- location of utilities controls
- special lab, overall seating arrangement
- space utilization
- demonstration station design and supporting facilities, etc.

Furniture

- working designs for various functions
- seating design for left handed and handicapped, etc.

Studio

- design of the studio, etc.

Staff

- content experts
- technical, nontechnical
- office members, etc.

Classroom

- design of seating layout in room location
- location and angle of the projection source for best viewing
- central control of electric switches of room and equipments
- room size, shape
- accessibility to seats and tables, etc.

Equipments

This aspect of audio - visual research applies to the design of evaluation, improvement and proper use of equipment. These are :

- control display designs and evaluation
- reliability and maintainability
- operational analysis
- safety analysis
- designs for user's manual, etc.

Agencies

This aspect of audio - visual research includes the relationship among various agencies like :

- UGC
- Doordarshan
- colleges
- universities, etc.
- other organisations

Environment

This area is concerned with the application of human factors principles and information in the environmental design of Audio Visual Research Centre (AVRC). The physical variables of the environment such as illumination, temperature, humidity, noise, heat, light distribution and air quality, etc. are only some areas in design of effective environment for performance, safety, comfort as well as psychological climate.

- lighting
- effect of heat upon equipment
- air quality and mental activity, etc.

Conclusion

It has been attempted to analyze the various aspects of the audio-visual research and to provide an integrated field of research and its application towards the goal of audio - visual education system. Based on the system analysis, six major components are identified *i.e.*, learner, instruction, facilities, equipments, agencies and environment of AVRC. They are discussed under a broad concept of audio - visual research. Within each of the major subsystems several representative topical areas have been identified to illustrate the kinds of research needed in this specific orientation. Further a third level of analysis also provides some typical research topics within some of the topical areas. A fourth level analysis, if done, would further identify many specific projects of audio - visual research which will be core of activities of the audio- visual researchers.

The School of Education, Devi Ahilya Vishwavidyalaya, Indore has undertaken studies on some of the above areas. Some researches have been conducted at M.Phil., M.Ed., and project level. Yadav (1988) developed a video cassette on Inquiry Training Model and found that the cassette was effective in terms of theoretical understanding of Inquiry Training Model. The reactions to the Inquiry Training Model and video cassette were favourable. Jaiswal (1988) found that the content and presentation of the science educational T.V. programmes for children were quite suitable.

The children reacted positively to the science T.V. programme. James (1988) developed a video cassette on Advance Organizer Model and observed that video instructional material on Advance Organizer Model helped in understanding the various concepts in a meaningful manner. The sound, visual, the adequate number of teaching points, their logical sequence, adequate discussion of the teaching points, use of appropriate language, normal speech delivery and suitable level of programme etc. were satisfactory. Danoria (1988) found that the content and presentation of general ETV programmes for children were quite suitable. The gains of students in general ETV programmes were significant. The students gave favourable reactions and suggestions towards the general ETV programmes. The NCERT and School of Education Indore, (1989) developed a video cassette on microteaching and found that audio-visual materials were effective in terms of theoretical understanding of microteaching of B.Ed. student teachers. A favourable attitude was found among the students towards microteaching. Apart from these, some more studies are in progress. These are related to evaluation of ETV programmes at higher education level, ETV programme related to health, welfare, environment and gardening, evaluating countrywide classroom TV programmes, and interactive video system. More researches on these lines are required to be conducted to make audio visual education effective in the Indian context.

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CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be Contracted
December 26-29, 1990	XXXVI All India Library Conference	The conference will discuss the theme "Computerisation and Library Network"	University of Jodhpur, Jodhpur	Dr.RK.Dave, Organising Secretary, Central Library, University of Jodhpur, Jodhpur–342003
January 18-20 1991	Tenth State Level Academic Conference of Maharashtra Federation of College Library Association (MFCLA)	Themes include "Library Consciousness in Society."	Peoples College, Nanded (Maharashtra)	Mr.P.M.Jaiswal, Convener Librarian, Peoples College, Nanded-431602
February 12-13, 1991	National Seminar on Shrimp Seed Production and Farming	To explore new vistas and latest technologies in Shrimp Seed Production and Farming	Orissa University of Agriculture and Technology, Bhubaneswar	Dr. PC Thomas, Director, College of Fisheries, OUAT, Rangailunda, Berhampur-760007
March 22-23, 1991	Fourth Annual Conference of the All India Association for Educational Research	To deleberate upon issues on the theme Education for All	Rashtriya Sikshana Samiti Trust, Bangalore	Dr. (Miss) T.K. Jayalakshmi, Principal, R.V. Teachers' College, Jayanagar, Bangalore- 560011
July 21-26, 1991	Seventh International Meeting of University Administrators	Themes to be discussed are: (i) Standards of Professionalism in University Administration; (ii) International Cooperation; and (iii) The Enterpreneurial University	Conference of Registrars and Secretaries and Conference of University Administrators of the United Kingdom.	Dr. F.C. Verschoor, Chairman, Organising Committee, Congress Bureau, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands
December 14-16, 1991	International Conference on Man & Environment	To discuss issues concerning the future of man and preservation of the unique planet earth	Motilal Nehru Regional Engineering College, Allahabad	Dr. Rk.Srivastava, Organising Secretary ICOMEN – 91, Department of Civil Engineering, Motilal Nehru Regional Engineering College, Allahabad-211004

Workshop on Pilgrimage Traditions

As a prelude to the International Symposium on Pilgrimage Traditions, a Pre-Seminar Workshop was recently held at Vraja Academy, Vrindavan. The workshop was inaugurated by Shri Satyanarayana Reddy, Governor of Uttar Pradesh.

The topics discussed at the workshop included: the phenomenon of pilgrimage–peregrinology, its conceptual structure, definition, cosmic perspective, historical background, pilgrims and their travel records through the ages, classification and hierarchy of holy places, sacred times, rituals and functionaries, religions and pilgrimage, along with the future of peregrinology considering its ancient roots, cultural and social significance, integrational force and resurgence trends today in India and the world over. Saints, academicians, scholars and dignitaries, representing institutions of India and abroad, presented papers on the comparative study and multi-dimensional role of pilgrimage traditions for mankind and participated in thought-provoking discussions. In this four-day workshop, the concept of pilgrimage as a dynamic current encompassing a spectrum of associated fields of study (i.e. geography, history and mythology) represented a true "Cultural cosmos" leading to a holistic unity.

It was proposed by the conclave that an independent seat of the discipline of Peregrinology and a School of Divinity should be established within different institutions of higher learning throughout the world to further strengthen this holistic integral study programme. The Workshop itself was a pilgrimage in that it was held in one of the most historical, religious and sacred sites of India and attracted representatives of varied faiths and cultural backgrounds. It was hoped that certain conclusions arrived at the workshop would unravel the new horizons of the discipline of peregrinology.

In his welcome address Dr. B.N. Sharma, Head of the Department of History, Dr. H.S. Gour University, Sagar and former Vice- Chancellor, Bhopal University, pointed out that the Society of Pilgrimage Studies of Allahabad and the Vraja Academy had jointly undertaken this venture, which will satisfy both the academic and the holistic worlds. Dr. Sharma emphasised that the holy land of Vraja conveyed to us the sacred message of Sri Krishna of peace and true contentment for the human spirit, which was an urgent need of the day when mankind was on the brink of disaster. Routes of pilgrimage and the different faiths to which the mankind adhered were linked at one point where the mystic realm of existence opened for the experience of the Divine. This inner pilgrimage coincide with the historic initiative which the Vraja Academy, Vrindavan, had undertaken by organising this workshop in order to promote the discipline of peregrinology as a discipline of science.

The keynote address was delivered by Dr. D. P. Dube, Convenor of the programme. He recalled that the first multi-disciplinary study of pilgrimage was advocated in an International conference "Pilgrimage : the Human Quest", held at the University of Pitsburg, USA in 1981. The march was continued by the academic forums on pilgrimage. In 1987 and 1988, the Association of American Geographers organised the World Sanskrit Conference at Leiden, Netherland (1987), Harvard University, Cambridge, MA, U.S.A. (1987), Eichstaff, West Germany (1988), and Varanasi, India (1990). The quest of pilgrimage continued in search of the spirit of pilgrimage and the conscious network finally culminated in Vrindavan in 1990 which was decided during the 11th anniversary of the Vraja Academy in 1989.

The participants included luminaries like Professor L.Gopal, Department of Ancient History and Culture, Benaras Hindu University, Varanasi, who spoke on the resurgence of interest in pilgrimage and the role it plays as a cohesive medium between diverse cultures, societies and humanity at large. Professor S.R.Rao, National Institute of Oceanography, Goa, highlighted the significance of peregrinological method in surface and underwater archeological research in Bhet-Dwarka, Govardhan and Mathura. Dr. S.P. Gupta, Archeologist and Adviser on Indian Tourism, said that since ancient times, pilgrims have been coming to India, seeking the truth about life. Today India has to embrace her unparalleled heritage of pilgrimage and to develop tourism, synthesizing the ancient culture and the modern times, in the consciousness of our legitimate belonging. Professor (Ms.) Peytchinova, University of Sofia (Bulgaria), maintained that the Krishna Bhakti Medieval Renaissance of Vrindavan is the highest culmination of the institution of pilgrimage in cultural geography of humanity as a whole. She wanted to disseminate the message of this Seminar on Pilgrimage to the teachers and students of her University as well as to the people of Bulgaria. In her thought-provoking yet emotional speech, she said that India is known from ancient times as the land and the harbinger of the light of wisdom. They have disseminated the message of love, compassion and consciousness far and wide through the communion of Pilgrimage heart to heart and thought to thought. Therefore, in the modern context, when humanity is on the precipice of chaos, confusion and nuclear holocaust, it is imperative that the leading universities and educationists as well as thinkers join together for the confluence – the Sangam of the East and the West. She said that at the Vraja Academy, she had learnt to beseach and to become true seeker of knowledge like those of the ancient seats of learning, Nalanda and Takshilla. The spiritual legacy of antiquity handed down to us by the mighty rishis, saints and sages in Bharat has been transmitted from Socrates and Plato through Christian and Muslim saints like St. Francis of Assisi, St. Augustine, Molana Jalaluddin Rumi, Fariduddin Attar and others. In the past four decades a spiritual renaissance in the present century has been ushered through the writings of such leaders of thought as P.A. Sorokin, Lewis Mumford, F.S.C.Northrop and A.H. Maslow. These leaders of thought have revived the true human spirit and have paved the way for reinstating love and altruism.

This modern spiritual renaissance which had once marked the Bhakti and Sufi traditions of medieval India is again visible in the concerted efforts of some awakened souls under the spiritual leadership of Babaji Maharaj who is guided by the grace of Sri Krishna to humanize the dehumanized society in every sphere of life. Babaji Maharaj is the moving spirit which is forging ahead for uniting the hearts and for the ultimate emancipation of mankind from the darkness of Tamas. This moving spirit is carrying forth the momentum of the renaissance through Vraja Academy – a seat of spiritual learning and elevation towards sublimity.

She urged that Cultural bonds, through this pilgrimage workshop may spread to Europe which is in the wake of renaissance in the true meaningful way of life. The discipline of peregrinology be nurtured by establishing School of Divinity in our centres of learning for furthering this cause of human salvation through this seminar, where the Vraj Academy can develop the links, she prayed.

Ms. U. Muhibova, University of Tashkent, Union of Soviet Socialist Republics, said that this workshop gave her the inspiration to hold such conclaves on pilgrimage in the University of Tashkent under the guidance and help of Indian Indologists, the Vraja Academy and Baba's inspiration and to write a cultural geography - lands, mountains and waters.

Ms. Petra-Radha Fiedler, Opera Singer, State Opera House, Munich, pointed out that it is under the guidance of the great seers and prophets that the soul's pilgrimage is embarked upon, in order to reach the reunion with the Divine and Conscious life.

Professor S.P.Singh, Department of Sanskrit, Aligarh Muslim University, gave a stirring talk on the vedic philosophy of pilgrimage and the integral essence of the sacred sojourn as established in the upanishadic teachings.

Prof. S.K. Agrawala, Secretary, Association of Indian Universities and Adviser for the Workshop, elaborated on the necessity of promoting an Eastern University of Consciousness earlier sought for by the Vraja Academy and the need to conserve the eco-environment and monuments in the Vraja area. The eight salient points for the integral development of the Vraja Bhumi, raised by Prof. S.K. Agrawala, were placed before the Governor for his consideration. These were :

(1) Special Cultural Authority be constituted for the Vraja Bhumi.

(2) The Yamuna eco-environment, from Yamnotri (source) to the Sangam (Allahabad) and Vraja Bhumi – the heartland of the Yamuna basin, between Delhi and Agra, be fortified.

(3) The Ghats and monuments along the holy banks of the Yamuna river through Kashi Ghat at Vrindavan and Vishram Ghat at Mathura, Thakurani Ghat at Gokul; as well as the water taming pilot project along the Yamuna Ghats from Vrindavan to Gokul may be undertaken.

(4) During the festival days at Vrindavan, Govardhan, Barsana, Nandgaon, Gokul and Dauji, these sacred places of Krishnalila sanctity be accorded the special Mela Status for civil amenities (health, water and hygiene) for the pilgrims, on the line of Magh Mela at Allahabad.

(5) The general education in the villages of the Vraja Bhumi along the four Tehsils of Mathura, Sadabad, Chata and Mat belonging to the Mathura district be provided a special status. This will, in turn, take care of health and hygiene, as well as modes of communication.

(6) The monuments, reservoirs and forests associated with the Krishnalilas along the entire periphery of 184 Kilometres, that is Chaurasi Kos-Parikrama should be afforested, conserved and renovated.

(7) The sacred shrubs and trees of the Vraja origin be reinforced in the area and their survey should be undertaken with a view to restore the original rich forests of Krishna period, as mentioned in our epics.

(8) Adequate provisions be made to check the march of Rajasthan desert towards the Vraja Bhumi so as to restore the pleasant ecosystem of the sacred land. The Botany Department of the University of Delhi may be encouraged to undertake this pilot project in association with the Indira Gandhi National Institute of Forests, Dehra Dun, the National School of Planning and Architecture, New Delhi, the National Institute of Design, Ahmedabad, and the Indian National Trust for Art and Cultural Heritage of Delhi.

Dr. K.S. Chauhan, Visiting Professor, University of Sofia (Bulgaria), said that the drastic social changes in East Europe have opened new dimensions of intellectual and cultural pilgrimage and proposed that such Seminars should be organised in some selected European Universities as well. The comparative medieval indological literature has created deep enthusiasm towards Indian Culture in Europe at this appropriate juncture to promote the in depth pursuits and he hoped that deliberations of this Seminar will deeply influence the cultural and educational developments in the European countries as a true tribute to the basic thought of educational renaissance through Pilgrimage.

In his remarks Shri Satyanarayana Reddy, the Governor of U.P. said "We are struggling in the name of class and religion, both internally and externally. It is only by such integrational measures such as the symposium and other related studies that these barriers between man and man can be bridged. The laudable project which has been undertaken by the Vraja Academy can play a significant role in educational and national unity". Sri Reddy welcomed the eight-point proposal of the conclave containing precise measures for the conservation and elevation of the cultural traditions of the Vraja Bhumi and other similar historical places of Indian cultural heritage.

The moving spirit of the workshop, Shri Babaji Maharaj shared with the participants, his own experience and vision into the real meaning of pilgrimage. In his inspiring message, he conveyed that all the journeys end at the meeting point of thingness and nothingness of the great void of mind from where the inner discipline of the pilgrimage began by observing the footprints and by following the footsteps of the enlightened ones, who are the masters of the journey to the great Beyond. The sacred soil of Vraja Bhumi is glorified by the holy footprints of Lord Krishna, in whose pasteureland the Lord has played his Lilas and herded the cows. He is the supreme Master of the human hearts. His messages and 'lilas' are imminent for all times and space but still the timeless one.

Proposing a Vote of Thanks, Srimati Nina Ranjan, Resident Commissioner, Government of U.P. in New Delhi and coordinator of the Workshop said, "For the first time such a symposium has been organised by the scholars, hailing from different lands, which has given an overall dimension to further study and understanding of the discipline of peregrinology. The Ministry of Culture and Tourism and the respective departments of the Central as well as State Governments can play a vital role in the national integration by supporting such initiatives and India's cultural missions to the humanity".

Recommendations

After in depth discussions, the scholars who gathered at the Vraja Academy, unanimously resolved that:

(1) The Tirthas situated at the holy sites from the Himalayas to the Kanyakumari and Dwarika to Puri, be declared the National Cultural Heritage Zones, with special reference to the landmark of Shri Krishna Lilas. The entire Vraja Bhumi, along the periphery of the Parikrama route be recognised as the Krishna Cultural Heritage Zone of India, and in particular, Vrindavan, the Centre of Bhakti renaissance, as the Holy City.

(2) There exists a Constitutional requirement/directive under article 49 of the Constitution of India, in regard to the protection of monuments and places of national importance. It was strongly recommended that this constitutional directive be implemented immediately by formulating a special law on similar lines, applicable to all the states of India, for the conservation and promotion of the holy Tirthas, the spiritual centres, in the length and breadth of the country.

(3) It is high time to start publishing a journal of peregrinology and also to organise production of an Encyclopaedia of Tirthas.

(4) Independent Schools of Divinity be initiated in the discipline of Peregrinology which will deal with the holistic studies of consciousness, heritage, culture and arts.

(5) In the first phase, the central universities and in the second some selected other universities (considering their regional distribution)be en-

couraged to establish departments of Heritage, Culture and Arts which will give due weightage to pilgrimage Traditions.

(6) The University of Delhi be requested to initiate studies in the area of Pilgrimage Traditions and can also organise international collaboration with some leading centres in the world like those already flourishing at Moscow (U.S.S.R.), Sofia (Bulgaria) and Harward as well as Columbia (U.S.A.).

(7) The Vraja Academy at Vrindavan be elevated to the status of an Eastern University of Consciousness which will serve as the nucleus for the study of Eastern and Asian Cultures.

(8) The eco-environment of the Vraja Bhumi be restored to its pristine glory through botanical survey and afforestation.

(9) This gathering of international scholars further resolves that spiritualism should be promoted for minimizing tensions, strifes and genocide that are rampant in this age. Since pilgrimage has been the most established and effective tradition for facilitating spiritual interactions, the diffusion of altruistic feelings, and the sense of human brotherhood, it is specifically suggested that UNESCO (United Nations Educational, Scientific and Cultural Organisation) may initiate steps to formulate a Treaty on the Promotion of Pilgrimage Traditions having its chief aim to facilitate travel for pilgrims all over the world.

Pilgrimage is an ennobling tradition coming down to this age since the hoary antiquity. From ancient times, India has been the vortex of great cultures and the cradle of a great civilization that has transmitted the message of peace, piety and love which is interwoven in its religious perspectives. It has focussed on the essence of all faiths and disciplines of Central Asia, South-East Asia, China, Korea and the Far-East as well as has accommodated in its vast framework, the essence of axial religions. It is, therefore, the need of our times that schools of divinity may be established for the study of peregrinology, indology and holistic sciences.

The aforesaid Treaty on the Promotion of Pilgrimage Traditions will give cohesion to spiritual resurgence and natural and cultural ecosystems of our mountains, rivers, waters, forests, etc. which landmark the dimensions of all permeating faiths of our holistic values. Such Treaty will, we believe, help and promote the conservation of the holistic values and eco-systems cherished by the great lovers of cultures all over the world. These ideas are requested to be placed before the UNESCO meeting for acceptance by the Member States. If such international Treaty comes into existence, it is hoped that such norms will be accepted by all countries of the world.

The Clarion Call

Shri Babaji Maharaj delivered his sacred message as a clarion call after the thoughtful interaction of ideas and the churning of deliberations arising out of inter-disciplinary approach had yielded some productive conclusions. The most revealing things emerged concerning the discovery of the lost city of Dwarka. The veritable narrations of Mahabharata are now conclusively established by the integrated researches in marine and surface archaeology, carbon dating, cultural geography and physics which have yielded startling cosmological phenomena. The inter-disciplinary research eventually established the continuity of the ultimate truth about existence revealed to us by Lord Krishna. Maharajji, while summing up the thoughts and deliberations conveyed that the inevitability of transcending all the dichotomies of life for the future transformations of man into the whole man in increasingly rising up on the surface of awareness and there is a global awakening that mankind must be protected from extinction which also appears inevitable. He gave a call to turn to the Vedas and reiterated that pilgrimage marks the most crucial endeavour to attain God-consciousness which is the mainspring of altruistic feeling love for mankind, and for inculcating the sense of human brotherhood. Sri Krishna's eternal flute resounds in the present age shrouded under the darkness of Tamas. The sacred clarion call came out from the sacred words of Babaji when he categorically uttered the truth that all religious pilgrimage and all holy places converge upon one and only one supreme truth – the love for the fellow being and regard as well as acceptance of man by man.

The Vedic Yajna institution and temple worship, Tathagata Buddhas message of Bodhisattwa and the Jain Tirthankaras, the ascendence to Siddha Shila, the sanctity of the Synagogue, the sacraments of the church and the piety of mosque and other faiths – all lead to the opening of the higher psyche. And pilgrimage to such holy places became fruitful if the quest of the seeker culminates in such opening. He called upon the awakened souls to unite on the spiritual plane and break the barriers that separate man from man, reinstate love and purge hatred and thus join the hearts. Human brotherhood means spiritual unity and joining the hearts. Such was his message the — clarion call for human brotherhood and a unified word through a unified self.

Award for Teacher Educators

An all-India competition is being organised by National Council of Educational Research and Training (NCERT) to promote experimentation, research and innovative practices in teacher training institutions of the country. The competition is open to the teaching staff, coordinators and principals of teacher training institutions including B.Ed. colleges and university departments of education. Those working in the recently- established District Institutes of Education and Training (DIETs) may also participate.

The objectives of the programme are to : (i) motivate teacher educators to try useful innovations in different areas of teacher education; (ii) encourage teacher educators to prepare concise and systematic reports of their innovations, experimental findings and tried-out new practices in the classroom; (iii) provide a forum for dissemination of results of experimentation, research and creative thinking to others working in the area.

The intending participants must submit papers based on their own creative thinking, experimental findings or critical study of a problem. The papers may run into 2,500 to 3,500 words and can be written in any Indian language or English. They should however not be based on M.Ed. or Ph.D. thesis or on any other institutional programme.

Innovations reported for the competition should give evidence of (a) identification, rationale and analysis of a particular problem; (b) approach utilised in tackling the problem; (c) teacher's imagination, resourcefulness, creative and original thinking in the processing of the problem; (d) systematic processing of data in arriving at conclusion; (e) suggestions for further research; and (f) its being cost-effective, communicable and implementable in other instituions.

Participants are expected to submit their papers to the State Institutes of Education (SIEs) or the State Council of Educational Research and Training (SCERTs) in their own respective states, and not to NCERT directly. The SIEs/SCERTs will first screen the entries before NCERT considers them for final selection.

Award winning teacher educators will be invited for a national meet where they can present their papers and discuss their innovations at a national seminar. The last date for receipt of papers in the respective SIEs/SCERTs is 31st December, 1990.

Thirty cash prizes of Rs. 1,000/- each are to be awarded, 20 for those working in elementary teacher training institutions and ten cash prizes for those working in teacher training colleges. Elementary teacher training institutions prepare teachers for primary schools, while secondary teacher training institutions offer B.Ed. degree courses and other training programmes.

UGC Aid for Communication Studies

The University Grants Commission (UGC) has offered Rs 25 lakhs as special assistance to Calcutta University to develop equipment for mass communication studies. This was revealed by the UGC co-ordinator for the special assistance programme, Prof. S. Bashiruddin, while delivering a lecture on "Communication and social change," at the Calcutta chapter of the Public Relations Society of India, (PRSI) recently.

Prof. Bashiruddin, who is the chairman of the board of studies of the department of communication and journalism of Osmania University, called on the PRSI to interact with the university, to help promote the subject. He said that communication was vital to society because when it was unfettered and effective, it served as a catalyst for social development.

Calcutta University teaches mass communication as a part of its post-graduate course in journalism.

Women's Health Workshop

The Deptt of Home Science and the Women's Studies Cell,S.D. College, Muzaffarnagar, in collaboration with U.P. Voluntary Health Association, Dehradun recently organised a three day workshop on "Women and Health". The workshop was inaugurated by Dr. L.N.Mittal, Principal of the College.

The focus of discussion at the workshop was on (1) National Health Policy, (2) The general scenirio of the Health status of women in Muzaffarnagar, (3) Teaching/Learning experience in Health Education, (4)Gynaecological problems, (5) Traditional folk media and other low cost media to communicate health messages, (6) Factors affecting women's health, (7) Women's diseases - leucorrhiea, infertility, child birth and anaemia, (8) Maternal and child health (MCH), (9) Personal hygeine, (10)Empowerment of women, (11) Entrepreneurship in women.

The workshop also provided participants to discuss the health problems relating to women and children. Several social and economic factors were taken into account. The participants were divided into sub groups and they prepared and presented reports for group discussions. The main aim of the workshops was to provide a training skill of below upwards rather than top-down. As the trickle-down theory has failed, the training programme must also be participatory so that it can draw its roots locally,it was observed. It was agreed that the workshop would be followed by action plan by adopting three villages by 12 students each so that the health massage could be spread. Each participant had also been asked to take up the awareness programme to reorient atleast one family in his/her surrounding. As the supervisory faculty consisted of programme officers of the two boys units and one girl unit, the follow up would involve NSS volunteers and technical support would be made available from U.P.Voluntary Health Association,Dehradun.

News from Agril. Universities

Women in Agriculture

More than 300 farm women were acquainted with the latest technology pertaining to the agriculture, animal science, veterinary and home science activities at a 'Women in Agriculture Day' recently celebrated by the Directorate of Extension Education of Haryana Agricultural University. Expressing his happiness over the mass awakening among the women folk Dr Amrit Lal Chaudhry, Vice Chancellor of the University said that apart from the contributions made by the women at the domestic and agriculture front, they also played key role in the formation of society itself. Dr.Chaudhry emphasised upon the need of organising such functions for the rural women folk at regular interval at the university campus. Others who spoke on the occasion, lauded the role played by women in social, cultural and economic development of the nation. Keeping in view the fact that more than 60 per cent of the farm work is done by the women folk, it was demanded that Krishi Pandit award should be conferred upon a progressive form woman so as to ensure their maximum participation.

News from UGC

Countrywide Classroom Programme

Between 1st January to 7th January, 1991 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.oo p.m. and 4.00 p.m. to 5.00 p.m.. The programme is available on TV Network throughout the country.

1st Transmission

1.00 pm. to 2.00 pm.

1.1.91

"The World of Adhesives - I"

"SEP - I : Mind Matters"

"Yoga For the Cure of the Spine"

2.1.91

"Energy For All "

"The Romance of Maps - II : The Evolution of Maps"

"Social Insects : Ants Biology, So cial Organisation"

3.1.91

"Computer Literacy - I : Information and Process System"

"An Anthropologists View of Folklore"

4.1.91

"Life Cycle of Stars

"Growing Up Emotionally"

"The Sight of Sounds"

5.1.91

"Understanding Cinema I : Scene & Shot"

"Theatre Architecture - IV : Medieval Sanskrit Theatre"

"Mudra - The Art of Communication"

6.1.91

No Telecast

7.1.91

"The Origins of Quantum Theory - From Planck to Bose - I : Max Planck

"Formation of a Company"

IInd Transmission

4.00 pm to 5.00 pm

1.1.91

"The Distribution of Molecular Speed"

"Teaching & Learning"

"Early Detection & Rehabilitation of Cancer"

2.1.91

"Vibration - III"

"Biography - An Art"

"Nutrition & Immunology"

3.1.91

"COBOL - 8 : Data Division - 2"

"Tragedy - Aristotle to Brecht - I"

4.1.91

"Algebraic Structure - II : Relation and Maping"

"Diversity in Unity : A Lecture by Prof. Yash Pal - I"

"Poetry on Roses"

5.1.91

"Consumer Protection - III : Right to Information"

"Kuchamani Khyal - The Endangered Folk Theatre Style - II"

"Body Building - I"

6.1.91

No Telecast

7.1.91

"Classical Mechanics - 8: Minimal Principles"

"Theory of Games - II : Business Applications"

"Shake Table"

Research Scientist Positions for Scholars

55 scholars have been selected by the University Grants Commission for the award of Research Scientist positions in the different subjects including Bio-Sciences (6), Hindi (5), Physics, Chemistry, Sanskrit (4 each), Telugu, History, Sociology and Anthropology, Political Science, Education and Psychology (3 each), Management, Philosophy, Pali and Budhist Studies (2 each), and Mathematics, Geophysics, Linguistics, Arabic and Law (one each).

The selected candidates are : Pratima Sen (Physics), R. Shankar (Physics), S.K. Gupta (Physics), M. Venkata Satyanarayan (Physics), S.K. Jain (Engg.), Anubha Mandal (Engg.), Neeta Singh (Methematics), S.P. Sychanthavong (Geology), Bahadur Singh Kotlia (Geology), Mangalampalli Subramanyan (Geophysics), Vinay Kumar Rai(Geography), Sudhir Kumar Agarwal (Bio-Science), Veena Agarwal (Bio-Science), Rakesh Kumar Seth (Bio-Science), B. Chatterjee (Bio-Science), C.R. Sri Kumari (Bio-Science), S. Ravichandran (Bio-Science), Virender Singh Yadav (Chemistry), S.K. Mehta (Chemistry), Anshuman Khare (Management), Asha Maheswari (Economics), Narasingh Bahadur Singh (Management), Bhagalata Asok Pataskar (Sanskrit), Meeta Banerjee (Sanskrit), Sharda Pandey (Sanskrit), Shakuntala Punjani (Sanskrit), J. Prabhakar Rao (Linguistics), M. Vijayalaxmi (Telugu), Vajeer Hasan (Arabic), G. Arunakumari (Telugu), Narendrakumar Singh (Hindi), Sadanand Shahi (Hindi), Bahadur Mishra (Hindi), Om Prakash Singh (Hindi), Anupa pande (History), G.R. Malik (History), Manik kher (Sociology and Anthropology), Sumita Chaudhuri (Sociology and Anthropology), Sobharani Dhiman (Sociology and Anthropology), A. Rekhi (Law), Regina Mulay parakh (pol. Science), Rajalaxmi Rath (Pol. Science), Kamalesh Chandra Pathak (Education and Psychology), Latha (Education and Psychology), Gaysu R. Arvind (Education and Psychology), PKS Sundarajan (Philosophy), Mukul Raj Mehta (Philosophy), Lalji (Pali and Buddhist Studies), Bandela Rajini (Pol. Science), Nirula Lal (History), Namdeo Jairam Bagsmare (Pali), N. Muniratnamma (Telugu), Tej Singh (Hindi).

The scheme for the award of Research Scientist Positions, initiated by the Commission in 1983-84, is intended to place 200 meritorious scientists in the universities for promoting high quality research in science, engineering, technology and humanities and social sciences. 138 such a scientists are already on positions in various universities and institutions.

News from Abroad

Portugal Introduces Student Loans

The Portuguese government is to introduce a system of subsidized student loans as part of a radical shake-up of its higher education. Other measures under consideration include massively increasing tuition fees (currently nominal) and establishing a funding council.

At present most of Portugal's 120,000 university and polytechnic students receive no help with costs of food, accommodation,books, equipment and travel. Ten percent of students receive means- tested state scholarships–worth 2,000 escudos a month (about pounds 9).

Secretary of State for Higher Education, Professor Alberto Correia Ralha, said: "Some banks will give the loans,but the Government will subsidize them. Students will have to repay - but we have not yet decided how much will be paid by the state, how much by the student. The law will be passed in a few months.

The other measures are expected to be outlined in a white paper to be published shortly. A working party set up by the government to examine university finance is understood to be considering massively increasing tuition fees which have never been raised from their 1941 level of 1,200 escudos a year.

To balance this the scholarship system is also likely to be extended to more students and the value of the awards increased.

Master's Programme in Management

The French Graduate Business Schools provide a general training in top management in two years, focussed on the needs of European and International corporations.

The two-year curriculum for Master's Programme in Management falls into four main periods:

***Core Courses:** Managerial economics, accounting, finance, management control, marketing, international business, business law, quantitative methods, information systems, management of human resources, various languages.

One Professional internship period of up to three months at an executive level. These on-the-job experiences meet a strong demand from French and European companies and are a major asset in helping the graduates, rapid integration into the business environment. They are fully integrated in the regular curricula.

* Each school offers a wide spectrum of courses allowing in-depth study or specialization in international affairs, accounting, management control, marketing, planning and forecasting, public administration, entrepreneurship, organizational behaviour and personnel management.

*** Business Policy** is the integrative course and the common denominator of the general management training of the programs.

The teaching methods at these schools include an original blend of conventional courses and active participation in seminars, group work, case studies, field studies, research, working papers, business games, using data processing equipment and video systems.

Internship periods have been integrated for many years into the normal, compulsory curriculum. They give to the student a closer contact and a deeper knowledge of French and European firms and their environment.

Lectures are given either in English "HEC-INTERNATIONAL TRACK" or in French at HEC Paris. They are given **in French** at the other "Grandes Ecoles".

In addition to French and English, students must learn a third language: Spanish, German, Italian, Arabic, Russian, Japanese, Portuguese.

An international exchange scheme provides students with an opportunity to spend their second year of studies in a Graduate Programme with one or two foreign universities, under a special agreement with those universities for students' exchanges.

The schools' degrees are accredited by the French Ministry of Education and are widely recognized by the business community.

Each school has a career office and organizes on-campus meetings and personal interviews with prospective employers.

The business community's interest in the schools is demonstrated by the great number of companies participating in the interviews, offering training periods and participating in the schools, executive seminars and research programs.

The degree granted by a "Grande Ecole" is the equivalent of the Master's Degree in English-speaking countries.

Schools also provide Specialized Master's courses(MS). They consist of one-year courses in such special fields as Science Management, Market Financing, Medical Management.

These MS courses are meant to train specialists in the relevant fields.

They also provide Doctor's Programs (PhD) to train students wishing to teach management courses.

The admission procedure is open to foreign students holding a Bachelor's Degree or its equivalent, obtained after at least 3 years of post secondary study outside of France.

Average age on entry is 23-24.

Further information and application forms may be obtained from :

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AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been required.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

Current Documentation in Education

A list of select articles culled from periodicals received in AIU Library during November 1990.

EDUCATIONAL PHILOSOPHY

Ediger, Marlow. Rene Descartes and education. **New Frontiers Edn** 20(3), 1990, 235-41.

Hickey, Tom and Brecher, Bob. In defence of bias. **Studies Hr Edn** 15(3), 1990, 299-312.

Horvath, Attila and Mihaly, Otto.Globalization of education and Eastern Europe. **Prospects**20(2), 1990, 145-54.

Psacharopoulos, George. Comparative education: From theory to practice... **Comp Edn Rev** 34(3), 1990, 369-80.

EDUCATIONAL SOCIOLOGY

Baxi, Upendra. "Justice-journey of backward classes": Some reflections on Chinnappa Reddy Report. **Mainstream**(Annual Number 1990)27 Oct 90, 29-34.

Chellappan, K. Role of universities. **New Frontiers Edn** 20(3), 1990, 254-7.

WOMEN'S STUDIES

Hans, S A B D. Status and role of women in Chotanagpur: A historical review. **New Fronteirs Edn**20(3), 1990, 297-301.

Uniyal, Lalit. Women and development: Some reflections. **Mainstream** (Annual Number 1990) 27 Oct 90, 109-25, 135.

EDUCATIONAL ADMINISTRATION

Gangadharan Nair, R. Relevance of 'Conflict management' in managing higher educational systems. **Management in Govt 21(4)**, 1990, 193-8.

Maduagwu, Samuel N. The role of accountability in administration. **New Frontiers Edn** 20(3), 1990, 242-7.

RAJASTHAN NON-GOVERNMENT Educational Institutions Bill, Bill No. 47 of 1986 (as amended by the Select Committee). **New Frontiers Edn** 20(3), 1990, 369-84.

Shatrugna, M. Restoring academic freedom through bureaucratic fiat. **Eco Pol Weekly** 25(47), 1990, 2582-3.

TEACHERS & TEACHING

Evans, Colin. Teaching the humanities: Seminars as metalogues. **Studies Hr Edn** 15(3), 1990, 287-97.

Macgregor, Jean. Collaborative learning inquiry as a process of reform. **New Directions for Teaching and Learning** 42, 1990, 19-30.

Palmer, Parker J. Good teaching: A matter of living the mystery. **Change** 22(1), 1990, 10-6.

Svinicki, Marilla D. Changing the face of your teaching. **New Directions for Teaching and Learning** 42, 1990, 5-15.

Syed, Shahabuddin. Language debate: A logical analysis. **Mainstream** (Annual Number 1990), 27 Oct 90, 89-93.

EDUCATIONAL TECHNOLOGY

Castro, Claudio de Moura and Alfthan, Torkel. Computers and education outside school. **Prospects** 20(2), 1990, 187-96.

Duguet, Pierre. Computers in schools: National strategies and their extension to the international level. **Prospects** 20(2), 1990, 165-72.

Jalaluddin, A K. Educational applications of computers for lifelong education. **Prospects** 20(2), 1990, 197-211.

Levrat, Bernard. Producing, delivering and transferring computer systems. **Prospects** 20(2), 1990, 157-63.

Neuville, Yves. Call for dynamic international co-operation in information technology. **Prospects** 20(2), 1990, 213-20.

Vasantha, A. Technology, education and work: New needs and new values. **New Frontiers Edn** 20(3), 1990, 314-9.

EDUCATIONAL EVALUATION

Garcia, Erminda and others. Portfolios: An assessment tool in support of instruction. **Intl J Ednl Res** 23(5), 1990, 431-6.

Glaser, Robert. Toward new models for assessment. **Intl J Ednl Res** 14(5), 1990, 475-83.

Prosser, Michael and Trigwell, Keith. Student evaluations of teaching and courses: Student study strategies as a criterion of validity. **Hr Edn** 20(2), 1990, 135-42.

Snow, Richard E. New approaches to cognitive and conative assessment in education. **Intl J Ednl Res** 23(5), 1990, 455-72.

ECONOMICS OF EDUCATION

Anderson, Richard E. and Massy, William F. The economic outlook and what it means for colleges and universities. **New Directions Hr Edn** 69, 1990, 5-19.

Dalton, Timothy and Greiner, Kenneth. Investing in an uncertain economic environment. **New Directions Hr Edn** 69, 1990, 39-56.

Kansal, S M. Disparity in income and levels of living among teachers in Delhi. **Eco Pol Weekly** 25(46), 1990, 2547-58.

Sailabala Debi. Cost-benefit analysis of Higher education: A case study. **Indian Ednl Rev** 23(4), 1988, 75-7.

Stone, Diana L. Private higher education in Australia. **Hr Edn** 20(2), 1990, 143-59.

SCIENCE EDUCATION

Rahman, A. Science and technology in India's development. **Mainstream** (Annual Number 1990) 27 Oct 90, 75-82.

PHYSICAL EDUCATION

Campbell, Louise. Physical education in British Universities: The search for status. **Studies Hr Edn** 15(3), 1990, 331-44.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Hayden, Martin and Carpenter, Peter. From school to higher education in Australia. **Hr Edn** 20(2), 1990, 175-96.

Jeyarasah, Saba. Education for the 21st century-Sri Lankan experience. **New Frontiers Edn** 20(3), 1990, 248-53.

Jeyasekaran, T Ambrose. Educational policies of Protestant Missions in South India till the end of 19th century. **New Frontiers Edn** 20(3), 1990, 339-68.

Virk, Muhammad Latif. The Universities of Pakistan. **ACU Bull Curr Doc** 95, 1990, 2-6.

BIOGRAPHICAL PROFILE

Bravo, Hector Felix. Domingo Faustino Sarmiento (1811-88). **Prospects** 20(2), 1990, 247-56.

Zhang, Lizhong. Cai Yuanpei, 1868-1940. **Prospects** 20(1), 1990, 129-35.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities

BIOLOGICAL SCIENCES

Forensic Sciences

1. Bhaskara Rao, M. **Identification of the dead by photographic measurements and rontgenographic measurements.** Punjabi. Dr O P Chugh, Director, Forensic Science Laboratory, Madhuban, Haryana.

2. Dhindsa, Avtar Singh. **A stability study for blood groups and enzyme types in some human tissues.** Punjabi. Prof P K Chattopadhyaya, Department of Forensic Science, Punjabi University, Patiala.

Environmental Sciences

1. Subbalakshmi Devi. Siddani. **Studies on habitat, food composition and helminth infestations of selected herpatiles of Vizianagaram District, Andhra Pradesh.** Andhra.

Biology

1. Beri, Vanita. **Studies on the pd antigen anti-body, system.** Punjabi. Dr. (Mrs) Harsurinder Kaur, Lecturer, Department of Human Biology, Punjabi University, Patiala.

2. Bhupinder Singh. **Growth of energy demand and contribution of alternative supply systems: A Panjab scenario.** PAU.

3. Chakrabarti, Alakananda. **Studies of pigment metabolism in relation to vitiligo.** Calcutta.

4. Joseph, Jose. **Effect of raw material quality on the shelf life of frozen stored fish and fishery products.** CUST. Dr K Gopakumar, Joint Director, Central Institute of Fisheries Technology, Matsyapuri, Cochin.

5. Joshi, Vijay P. **Studies on the female reproductive physiology of the prawn,** Macrobrachium idella **(Hilgendorf 1898).** CUST. Dr A D Diwan, Scientist S-2, Central Marine Fisheries Research Institute, Cochin.

6. Lakkapragada, S N Kumar. **Mineral load and transport in upper Ganga basin.** Roorkee.

7. Maitra, Subirranjan. **Studies on mechanism of action of converting enzyme inhibitor, captopril in hypertensive animal models.** Calcutta.

8. Rajendra Kumar, Garnepudi V. **Synthetic oligonucleotides as probes for nucleic acid protein interactions: Bacteriophage P22 MNT operator-repressor system.** JNU. Dr Dipankar Chatterji.

9. Ray, Swapan Kumar. **Some aspects of nutritional status of the adolescent boys of Reang tribe in Tripura.** Calcutta.

10. Sisodia, Suresh Kumar. **Ecological studies of upper Ganga identification and representation of the state of the river.** Roorkee.

11. Varma, K Kerala. **Studies on energy exchange and upper ocean thermal structure in Arabian Sea and heat transport in Northern Indian ocean.** CUST. Dr P G Kurup, Prof, Physical Oceanography and Meteorology Division, School of Marine Sciences, Cochin.

Biochemistry

1. Bharali, Rupjyoti. **Changes in the livers of rat fed with betelnut, arecanut: A suspected carcinogen.** Gauhati. Dr P Goswami, Director, I A S S T, Guwahati.

2. Chary, C Vasant Kumar. **Studies on peptide antibiotic-thiostrepton.** Osmania.

3. Goyal, Ruby. **Role of lipids in biological functions of bacterial membrane.** BHU. Prof M Chakravorty, Department of Biochemistry, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

4. Karamdeep, Lilly. **Partitioning and metabolism of carbohydrates, with special reference to sucrose in the developing nodules and pods of chickpea,**Cicer arietinum. PAU.

5. Mujeeb, Anwer. **Drug nucleic acid interactions.** Roorkee.

6. Ramana Devi, Ch. Venkata. **Comparative studies on calcium ralated changes in anaemic red blood cells from thalassaemia, iron deficiency and G6 PD deficiency anaemias.** Osmania.

7. Sri Ramana, Konduru. **Chemical and in vitro anticoagulant studies on two seaweed polysaccharides and chemical reinvestigation of a plant polysaccharide.** Andhra.

8. Veena. **Effect of flavonoids on** Rhizobium **metabolism and symbiotic nitrogen fixation.** HAU.

Microbiology

1. Bharathi, A. **Studies on intergeneric transfer of** Escherichia coli **R-plasmids and location of symbiotic genes by using curing agents in** Rhizobium meliloti. Osmania.

2. Sasikala, K. **Studies on the biomass yield and photo production of hydrogen by a new isolate of purple non-sulphur photosynthetic bacteria,** Rhodobacter sphaeroides O.U.001. Osmania.

3. Sharma, Poonam. **Studies on symbiotic nitrogen fixation in cowpea,** Vigna unguiculata **(L.) Walp.** PAU.

4. Shravan Kumar. **Studies of bioenergy (hydrogen) production potentials of a non-diazotrophic cyanobacterium,** Oscillatoria sp. Osmania.

Botany

1. Bandla, Sesha Giri. **Studies on cytotaxonomy and forensic significance of some fresh water diatoms.** BHU. Prof R S Ambhast, Department of Botany, Banaras Hindu University, Varanasi.

2. Borah Bhuyan, Nirmali. **Studies on certain fungal pathogens of** Solanum khasianum **Clarke with particular reference to wilt caused by** Fusarium oxysporum **Schlecht Ex Fr.** Gauhati. Dr D N Bordoloi, Assistant Director and Head, Medicinal and Economic Plants Division, Regional Research Laboratory, Jorhat, Assam and Prof D N Baishya, Prof, Department of Botany, Gauhati University, Guwahati.

3. Daizy Rani. **Phytotoxic properties of** Parthenium hysterophorus L. Panjab.

4. Dwivedi, Shiva Kumar. **Soil fungal communities of Guava orchards with emphasis on the wilt disease syndrome.** BHU. Prof P S Ambhast, Department of Botany, Banaras Hindu University, Varanasi.

5. Gupta, Ashis Kumar. **Studies on the floristic survey of Birbhum District, West Bengal with reference to environmental biopollutants.** Visva Bharati.

6. Hota, Jayanti. **Nucleic acid analysis and DNA hybridization studies in some more species of genus** Cassia **of Leguminosae.** Berhampur. Dr P A Khan, Prof, Department of Botany, Berhampur University, Berhampur.

7. Jha, Ashok Kumar. **A study on revegetation of coal-mine spoil.** BHU. Prof J S Singh, Department of Botany, Banaras Hindu University, Varanasi.

8. Jyothi, B. **Ecological and biochemical aspects of algal blooms.** Osmania.

9. Karnakar Reddy, S. **Induced mutagenesis and tissue culture studies in sunflower.** Osmania.

10. Mangal, Parshotam Dass. **Variability analysis in** Verbesina encelioides **(Compositae).** Panjab. Prof B S Gill, Department of Botany, Punjabi University, Patiala and Prof M L H Koul, Chairman, Department of Botany, Kurukshetra University, Kurukshetra.

11. Mohanty, Bijoy. **Biobeneficiation to remove silica from ores and minerals magnesite ore as a case study.** Osmania.

12. Mukhopadhyay, Chittaranjan. **Taxonomic and phytogeographical studies on the flora of Mirik and its environs in Darjeeling District.** BHU.

13. Natrajan, K. **Gene expression in yeast: Studies on glucosamine -6-phosphate deaminase gene of** Candida albicans. JNU.

14. Ndukuba, Patrick Iheanyichukwu. **Effect of photoperiodism, involvement of the pineal organ and certain neuropharmacological studies on tail regeneration in the gekkonid lizard,** Hemidactylus flaviviridis. Baroda.

15. Pandey, Arvind Bhushan. **Effects of predation (grazing) and pesticides on ricefield cyanobacteria and algae.** BHU. Prof H D Kumar, Department of Botany, Banaras Hindu University, Varanasi.

16. Ramachandran, N. **Bioefficacy of systemic fungicides against phytophthora infections in black pepper,** Piper nigrum. Calicut. Dr Y R Sarma, Senior Scientist, National Research Centre for Spices, Marikunnu, Calicut.

17. Sandhu, Jatinder. **Nitrogen dynamics in a plantation stand of** Leucaena leucocephala (Lam) **de Wit.** BHU. Prof R S Ambhast, Department of Botany, Banaras Hindu University, Varanasi.

18. Saxena, Manju. **Xenobiotic biotransformation mechanisms in** Aspergillus flavus **with special reference to endogenous aflatoxins.** Delhi.

19. Singh, Udai Pratap. **Studies on brown spot of paddy,** Oryza sativa L. **caused by** Drechslera oryzae. BHU. Dr K P Singh, Reader, Department of Mycology and Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

20. Tripathy, Purna Chandra. **Effect of clipping and fertilization on the structure and function of a grassland ecosystem.** Berhampur. Dr M K Misra, Lecturer, Department of Botany, Berhampur University, Berhampur.

21. Wali, Amrita. **Tissue culture studies with Guggul,** Commiphora wightii, **Aronott Bhandari and Jojoba,** Simmondsia chinensis **Link Schneid.** Baroda.

Agriculture

1. Barua, Subhash Ch. **Effect of triacontanol on the growth and fruiting of plum,** Prunus selicina **L.** YS Parmar. Dr C Parmar, Department of Fruit Culture and Orchard Management, College of Horticulture, Solan, Himachal Pradesh.

2. Borah, Prahlad. **Studies on propagation of some forest tree species by stem cutting.** YS Parmar. Dr P K Khosla, Director of Extension Education, University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh.

3. Buragohain, Mihir Kumar. **Studies on variability and phylloplane microflora interactions in relation to** Xanthomonas campestris **pv. citri (Hasse) dye.** HAU.

4. Choudhary, Ram Gopal. **Population dynamics of rice gundhi bug,** Leptocorisa acuta **Thunberg.** BHU. Dr D S Mishra, Reader, Department of Entomology and Agricultural Zoology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

5. Desai, Jayprakash Bhimrao. **Water requirement of Basrai banana,** Musa paradisiaca L. Marathwada Krishi. Dr V K Patil, Director of Instruction and Dean, Faculty of Agriculture, Marathwada Agricultural University, Parbhani.

6. Dina Nath. **Studies on acetylcho-linestorass during embryonic diapause development of** Lymantria obfuscata **Walk. at certain temperature conditions.** BHU. Dr H N Singh, Prof, Department of Entomology and Agricultural Zoology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

7. Man Singh. **Weed control studies in cabbage,** Brassica oleracea var. capitata **L.** HAU.

8. Mohinder Singh. **Studies on insect-parasitic nematodes.** YS Parmar. Dr N K Sharma, Chief Scientist, Regional Horticultural Research Station, Jach, District Kangra, Himachal Pradesh.

9. Nooh Shahraeen. **Investigation on virus other than cowpea mild mottle virus (CMMC) causing mosaic in soybean,** Glycine max **(L) Merrill.** Marathwada Krishi. Dr V R Mali, Head, Department of Plant Pathology, Marathwada Agricultural University, Parbhani.

10. Raju, S V S. **Acetylcho linesterase activity during embryonic diapause development of Indian gypsy moth,** Lymantria obfuscata **Walk, under certain temperature and chemical treatment conditions.** BHU. Dr H N Singh, Prof, Department of Entomology and Agricultural Zoology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

11. Singh, Sudhakar. **Effect of nitrogen, gibberellic acid and benzyladenine on growth, yield and quality of onion,** Allium cepa L. BHU. Prof C B S Rajput, Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

12. Sukhbir Singh. **Availability of phosphorus in heavy metals polluted soils.** HAU.

Zoology

1. Das, Pannalal. **A study on the taxonomy of some Indian aphids (Homoptera: Aphididae) with special reference to their cytology.** Calcutta.

2. Geetha, B. **Effect of biological response modifiers on murine peritoneal macrophages** in vitro BHU. Dr A Sodhi, Reader, Department of Zoology, Banaras Hindu University, Varanasi.

3. Gupta, Rajani. **Effect of some pesticides on the brain and some tissues of fish.** H S Gour. Dr Y N Sahai, Reader, Department of Zoology, UTD, Sagar.

4. Hota, Prafulla Kumar. **Ecology of soil nematodes in tropical irrigated crop fields of Sambalpur, India.** Sambalpur. Dr G B Pradhan, Lecturer, Department of Zoology, Government College, Sundargarh.

5. Jagdeep Kaur. **Characterization of estrogen receptors and their interaction with chromatin during ageing of rats.** BHU. Dr N K Thakur, Reader, Department of Zoology, Banaras Hindu University, Varanasi.

6. Jagdeep Singh. **Taxonomic revision of subfamily Allantinae (Tenthredinidae: Hymenoptera) from India.** Punjabi. Dr M S Saini, Department of Zoology, Punjabi University, Patiala.

7. Manohar Rao, S. **Study on the population dynamics of helminth parasites of certain fresh water cat fishes of Hyderabad and Rangareddy District, Andhra Pradesh.** Osmania.

8. Nair, Amit. **Monitoring of DDT, HCH and HCB residues in the Delhi environment and the fate of radiolabelled DDT in three different soil types.** Delhi.

9. Purohit, Snehlata. **Histochemical and histopathological studies on the trematode,** Ceylonocotyle scoliocoelium **(Fischoeder, 1904) occuring in sheep of Indore Region.** Devi Ahilya.

10. Ramiah, Kapa Dasaradha. **Observations on population trends of** Culex quinquefasciatus **Say 1823 (Diptera: Culicidae) and transmission indices on bancroftian filariasis during and after integrated vector control programme in Pondicherry.** Pondicherry.

11. Sanjiv Kumar. **Taxonomic revision of genus** Pachyprotasis hartig **(Tenthredinidae: Hymenoptera) from the oriental region.** Dr Devinder Singh, Lecturer, Department of Zoology, Punjabi University, Patiala.

12. Sarada, Sanaka. **Studies on cestode parasites of elasmobranch fishes of Visakhapatnam with special reference to histology and histochemistry of a tetraphyilid and a lecanicephalid.** Andhra.

13. Singh, Manju. **Qualitative and quantitative changes in some food grains due to mite infestation.** HAU.

14. Varma, Turimella Ravi. **Effect of salinity and the pesticide endosulphan on the respiration of a brackish water oligochaete,** Pontodrilus bermudensis **Beddard.** Andhra.

Medical Sciences

1. Abhimanyu Kumar. **Status of kaumarabhrtya in ancient India.** BHU. Prof C Chaturvedi, Department of Prasuti Tantra, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

2. Cnaturvedi, Sugandh. **Botanical study of certain aquatic medicinal plants.** BHU. Prof J K Ojha, Department of Dravya Guna, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

3. De, Swapan Kumar. **Experimental study of aerobic capacity (VO Max) of smokers and non smokers of different age groups.** Calcutta.

4. Gupta, Harish Chandra. **A new step-care treatment of hypertension (Shleshamavrit Vyan).** BHU. Prof S N Tripathi, Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

5. Pande, Devendra Nath. **Further studies on poorvakarana in anaesthesia.** BHU. Dr S B Pande, Reader, Department of Shalya Shalakya, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

6. Singh, Sneh Prabha. **Evaluation of cell-mediated immunity in carcinoma of the cervix uteri: A follow up study.** BHU. Prof Saroj Gupta, Department of Pathology, Insitutute of Medical Sciences, Banaras Hindu University, Varanasi.

CLASSIFIED ADVERTISEMENTS

JAMNALAL BAJAJ INSTITUTE OF MANAGEMENT STUDIES

Dadabhai Naoroji House, 164, Backbay Reclamation, Road No. 3, Bombay-400 020.

Applications are invited in the prescribed form for the following posts at Jamnalal Bajaj Institute of Management Studies, University of Bombay.

Sr. No.	Designation of the Post	No.of Posts	Post Reserved for (SC/ST/DT & NT)	Open Category	Area/Additional Qualification
1.	Professor	1	1	–	Statistics/Operation Research
2.	Professor	1	1	–	Economics/Business Environment
3.	Reader	2	1	1	Marketing/Operations Master's Degree in Management/Engineering/ Mathematics/Statistics
4.	Reader	1	–	1	Accounting & Finance Master's Degree in Management/Commerce
5.	Reader	1	–	1	Personnel Management/Industrial Psychology
6.	Reader	1	–	1	Human Factor Engineering./ Environmental Psychology
7.	Lecturer	2	1	1	EDP & MIS/Quantitative Methods/ Operations Master's Degree in Managment/Engineering.Technology/ Computer Science/Mathematics/ Statistics.
8.	Lecturer	1	–	1	Industrial Relations/ Personnel Management/Industrial Psychology. Master's Degree in Management/ Personnel Management/Industrial Relations/Industrial Psychology
9.	Lecturer	1	–	1	Accounting/ Finance Master's Degree in Management/ Commerce

The scales for the posts are prescribed by the U.G.C. A detailed advertisement together with a set of prescribed forms of nine applications can be had from the office of the Institute. A request for supply of set of nine prescribed forms by post should be made sufficiently in advance with self-addressed stamped (Rs. 5/-) envelope of the size of 27x 12 cms.

Nine copies of the applications duly completed in the prescribed form together with the copies of the certificates and the prescribed fees should reach the Director, J.B.Institute of Management Studies **on or before 15th February, 1991**, in case of local candidates, and on **or before 28th February, 1991**, in case of outstationed candidates.

Bombay-400020.
December 1, 1990.

DR. P.K. Ghosh
DIRECTOR

REGIONAL ENGINEERING COLLEGE

ROURKELA-769008(ORISSA)

Advertisement No. 3/90

Dated. 14.12.1990

Applications are invited in the prescribed form in duplicate for the following posts :-

A. ASSISTANT PROFESSOR, WORKSHOP: Scale : Rs. 3700-125-4950-150- 5700/- (Plus State Government Dearness Allowance); **Qualification & Experience:** (a) First Class Master's Degree in Mechanical/Metallurgical Engineering; (b) 5 year's experience in Teaching/Industry/Research at the appropriate level (Candidates from Industry/Profession with recognised professional work equivalent to Master's Degree in Engineering.Technology would also be eligible.) **Desirable** :Ph.D. Degree in Engineering/Technology.**Field of Specialisation** :Manufacturing Engineering/Production Engineering/Foundry Engineering/Machine Tool Technology/Machine Tool Design.

B. LECTURER, HUMANITIES :Scale:Rs. 2200-75-2800-100-4000/-(Plus State Government Dearness Allowance) **Qualification & Experience**:First Class Master's Degree in Economics/Psychology. (Candidates possessing M.Phil/Ph.D. Degree shall be granted 1 and 3 advance increments, respectively.)

Preference will be given to SC/ST/Physically handicapped candidates who are otherwise considered qualified. Candidate abroad may apply on plain paper giving full bio-data.

Further details prescribed for the posts and application forms will be available from the undersigned on payment of Rs.15/- in shape of Crossed Bank Draft in favour of "Principal, Regional Engineering College, Rourkela-769008", payable at S.B.I, Rourkela enclosing a self addressed envelope 23cm x 10cm in size, with postage worth Rs.2.00. The last date of receiving complete applications is **14.1.91.**

N.C.Mohanty

REGISTRAR

S.N.D.T. WOMEN'S UNIVERSITY

J.N.T. Road, Bombay-400 020

Advertisement No. 28

November 5, 1990

WANTED

Applications are invited for the post of (1) Jr. Clerk (Rs.950- 1500) 2. Watchman (Rs.750-940) 3. Liftman (Rs.775-1150) 4. Peon (Rs.750-940) 5. Sweeper (Rs.750-940) under Reserved Category SC/ST only, to be filled in at the S.N.D.T Women's University, Bombay- 20 in the prescribed form only available on payment of Rs. 15/- (Non-teaching) by M.O/Cash on any working day, so as to reach the undersigned on or before 15 days from the date of its advertisement.

P.K.Thakkar
REGISTRAR

Office of the Registrar

GAUHATI UNIVERSITY
GAUHATI-14

Advertisement No. 8 of 1990

Applications in the Standard Form prescribed below are invited from eligible candidates and will be received upto **21.1.91** for the following posts.

7th Plan Posts :

1. Reader in Applied Botany & Biotechnology. - 1 post:E.Q. : M.Tech/M.Sc.(Agri)/M.Sc. in Botany/Agri-Botany in Plant Biochemistry/Genetics/Microbiology with a doctorate degree and five years teaching experience in postgraduate classes. Desirable : Specialisation in Enzymology/Molecular/Genetics/Genetic/ Engineering/Immunology.

2. Lecturer in Assamese - 1 post.E.Q. : M.A. in Assamese group 'B' with postgraduate degree or Diploma in Linguistics,Or,

M.A.in Linguistics with specialisation in Tibeto-Burman group.

3. Lecturer in Astrophysics - 1 post. Specialisation in an aspect of observational Astronomy. Must have a Ph.D. Degree preferably in Astrophysics with two years post-doctoral experience. Experience in observational work will be an added qualification,Or,

M.S.c. in Physics with Specialisation in Astrophysics or M.Sc. in Astrophysics with a strong research background may also apply. Certificate of proficiency in observational Astronomy at post-M.Sc. level will be an essential qualification.

4. Lecturer in the Deptt. of Law - 1 post.
Specialisation - Open.

Permanent Posts :

5. professor of Bengali - 1 post.
Specialisation - Open.

6. Professor of Psychology - 1 post.
Specialisation - Open.

7. Professor of Education - 1 post.
Specialisation - Open.

8. Professor of Hindi - 1 post.
Specialisation - Open.

9.Professor of Applied Botany & Biotechnology - 1 post.Specialisation : Biotechnology/Biochemistry/Crop-Physiology, Mycology & Plant Pathology, Genetics & Plant Breeding, Molecular genetics, Industrial Microbiology with basic post-graduate degree in Botany/Agriculture/Biochemistry/Agri-Botany/Bio-technology.

10. Reader in History - 1 post.
Specialisation : Ancient India.

11. Reader in Hindi - 1 post.
Specialisation : Open

12. Reader in Arabic - 1 post.
Specialisation : Open.

13. Reader in Chemistry - 1 post.
Specialisation : Inorganic Chemistry.

14. Reader in Chemistry - 1 post (Temporary leave vacancy).
Specialisation : Physical Chemistry.

15. Reader in Commerce - 1 post.
Specialisation : Open.

16. Reader in English - 1 post.
Specialisation : Open.

17. Reader in Botany - 1 post.
Specialisation : Taxonomy/Cytogenetics & Plant Breeding/Microbiology/Mycology & Plant Pathology.18. Reader in Computer Science- 1 post.
Specialisation : Open.

19. Reader in USIC - 1 post.
Specialisation : At least 2nd class post-graduate degree in Engineering (M.Tech/M.E.) or doctorate degree in Science or Engineering Equivalent research work of high standard. At least 5 years experience in R & D of instruments and five years teaching experience in his field of specialisation.

20. Reader in Assamese - 1 post.
Specialisation : M.A. in Assamese Group B with Ph.D. in Assamese.preferably having training in Linguistics or M.A.in Linguistics with Ph.D. in Assamese.

21. Reader in Applied Botany & Biotechnology - 1 post
Specialisation : M.Sc. in Microbiology with specialisation in Industrial Microbiology. Candidates, experienced in Industrial Microbiology will get preference.

22. Reader in Applied Botany & Biotechnology. - 1 post.
Specialisation : M.Sc. in Applied Botany & Biotechnology/Agri- Botany/Agriculture/Botany with specialisation in Molecular Genetics/Recombinar DNA technique/Microbial Genetics.
Ph.D. degree in relevant fields and published papers with minimum ten years post-graduate teaching desirable.

23. Reader in Education - 1 post.
Specialisation : Experience in conducting psychological Laboratory work at post-graduate level.

24. Reader in MIL - 1 post
Specialisation : (a) M.A. in Assamese (Group B)/Sanskrit/Linguistics with Ph.D. in the subject. (b) Diploma or Certificate in Bengali/Oriya /Hindi and Dip. in Assamese for non-native spoken candidate. (c) At least 5 years P.G. teaching experience and/or 10 years in Degree Major level.

25. Reader in Mathematics - 1 post.
Specialisation : Open.

26. Reader in Applied Botany & Biotechnology - 1 post.
Specialisation : M.Sc. in Applied Botany & Biotechnology/Agricultural Botany/Agriculture/Botany/Microbiology with specialisation in Mycology, plant pathology and Microbiology. Ph.D. degree or equivalent published worked with teaching experience desirable.

27. Lecture in Botany - 1 post.
Specialisation : Angiosperm Ecology/Microbiology/Mycology & Plant Pathology.

28. Lecturer in Zoology - 1 post.
Specialisation : M.Sc. in Zoology with specialisation in Animal Ecology. Preference will be given,to candidate having experience in research and teaching.

29. Lecturer in History - 1 post.
Specialisation : Modern India.

30. Lecturer in History - 1 post.
Specialisation : Mediaeval India.

31. Lecturer in Chemistry - 1 post.
Specialisation : Physical Chemistry.

32. Lecturer in Chemistry - 1 post.
Specialisation : Organic Chemistry.

33. Lecturer in Mathematics - 1 post.
Specialisation : Applied Mathematics preferably with fluid dynamics/Numerical Analysis.

34. Lecturer in Mathematics - 1 post.
Specialisation : Applied Mathematics preferably with specialisation in Space Dynamics/Numerical Analysis/Fluid Turbulence/Plasma Physics.

35. Lecturer in Economics - 1 post.
Specialisation : Open.

36. Lecturer in Bengali - 1 Post.
Specialisation : Either Vaienava Literature or Post-Tagorean Literature.

37. Lecturer in M.I.L. - 1 post.
Specialisation : M.A. in Oriya having Ph.D. either in Literature or in Language or in Comparative Literature with adequate knowledge of Linguistics.

38. Lecturer in M.I.L. - 1 post.
Specialisation : M.A. in Assamese Group B and capable to read old Assamese Manuscripts and to take M.Phil Classes, Research publications as documentary evidence of consistent research.

39. Lecturer in Linguistics - 1 post.
Specialisation : A good Master's degree in Linguistics from any statutory Indian University. Training in M.A. or post M.A. level in any of the following (in structural and/or Transformational Generative Model)will be regarded as an additional qualification. (a) Tibeto-Burman Linguistics (Bodo or Mishing or karbi or Dimasha). (b) Assamese Linguistics Candidates specialising diachronic linguistics need not apply.

40. Lecturer in Computer Science - 1 post.
Specialisation : Open. Minimum qualification : Master's degree in Computer Science or in Allied subjects with at least a post-graduate diploma in Computer science from a recognised Institution.

41. Lecturer in USIC - 1 post.
Specialisation : E.Q. : At least 2nd class B.E./B.Tech/M.Sc. with Electronics.Instrumentation and two yrs. experience in operation, repair and maintenance of modern Instruments. A flairs for R & D activity in Instrumentation is desirable. A doctorate degree holder will get preference.

42. Lecturer in Applied Botany & Biotechnology - 1 post.
Specialisation : M.Sc. in Biotechnology with specialisation in Molecular genetics/Immunology.

43. Lecturer in Commerce - 1 post.
Specialisation : M.Com. with specialisation in Marketing group. M.Com. candidates having Diploma in Marketing.M.B.A. Degree.

44. Lecturer in Commerce - 1 post.
Specialisation : M.Com. with financial Management Banking Honours at degree level preferred.

45. Lecturer in Commerce - 1 post.
Specialisation: M.Com. with Marketing Management. Finance and Management group may also apply.

46. Lecturer in Pol.Science - 1 post.
Specialisation : Sociology.

47. Lecturer in Pol.Science - 1 post.Specialisation : Modern Political Analysis & Research Methodology.

48. Lecturer in Assamese - 1 post.
Specialisation : M.A.in Assamese (Group A) with Ph.D. Degree/Diploma/Training in Comparative Literature.

49. Lecturer in Chemistry - 1 post.
Specialisation : Inorganic Chemistry.

50. Lecturer in Applied Botany & Biotechnology - 1 post. (Temporary leave vacancy). Specialisation : E.Q. : M.Sc. in Applied Botany & Biotechnology.Agricultural Botany with specialisation in Crop Physiology.

51. Lecturer in Physics - 2 posts.
Specialisation : Open.

Scale of Pay :

1. Professor : Rs. 4500-150-5700-200-7300/-.
2. Reader : Rs. 3700-125-4950-150-5700/-.
3. Lecturer : Rs. 2200-75-2800-100-4000/-.

ESSENTIAL QUALIFICATIONS :

Professor : An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at Doctoral level.
Or,An outstanding scholar with established reputation who has made significant contribution to knowledge.
Reader : Good Academic record with a doctoral degree in the relevant subject or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years experience of teaching and or research provided that atleast three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer : (a) A doctorate degree or research work of an equally high standard, and (b) Master's Degree with good academic record with at least 55% marks or its equivalent grade in the subject from an Indian University or an equivalent degree from a foreign University. Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subject. Provided further that if a candidate possessing a Doctorate degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record with at least 55% marks and its equivalent grade at the Master's degree level (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he/she has done research work for atleast two years or has practical experience in a research Laboratory/Organisation on the condition that he/she will have to obtain a Doctorate degree or give evidence of research of high standard within a reasonable time. UGC norms shall be applicable in all cases of appointment and career advancement.
Lecturer of Law (for LL.M.Classes). ; Master's degree in Law with at least 55% marks or its equivalent grade from an Indian University or an equivalent degree from a foreign University.

Candidates should have a good academic record with a doctorate degree Or research work of an equally high standard.

PROCEDURE OF SUBMISSION OF APPLICATIONS :

Application in prescribed form mentioned below in 7(seven) copies together with an application fee of Rs. 20/-(Rupees twenty) and Rs. 10/-(Rupees ten) in case of Scheduled Caste/Scheduled Tribes candidates only by "CROSSED INDIAN POSTAL ORDERS" drawn in favour of the Registrar,Gauhati University payable at Gauhati - 781014 Post Office should be sent in an inner sealed cover superscribed application for post of (Name of the post applied for with Sl.No.) Advertisement No. 8 of 1990 enclosed in an outer cover addressed to the Registrar, Gauhati University, Guwahati - 14.

LAST DATE OF RECEIPT OF APPLICATIONS :

Applications will be received upto 21.1.91 only. Applications received after the last date of submission and not submitted in prescribed form as given below in 7 (seven) copies will not be entertained. Copies of certificates and Marksheets must be attached with each copy of application.

No. of this advertisement and name of the post along with the Serial No. of post must be referred to in the application..

INTERVIEW: Candidates will be required to appear at an interview if and when called for at their own cost.

Canvassing directly or indirectly will be a disqualifaction.

D.C. Baroowa

REGISTRAR

PRESCRIBED FORM FOR APPLICATION

1. Advertisement No. :
2. Serial No. of the post in the Advertisement :
3. Name of the post applied for :
4. Name of the applicant in full (in block letters.) :
5. Father's name in full :
6. Home address in full :
7. Present address for communication. :
8. Date of Birth by Christian era :
9. Age on the date of application :
10. Nationality :
11. Community (Scheduled Caste/Tribes).
12. Educational qualification :

Examination passed	Name of Board/University.	Yr. of passing	Div./Class	P.C.of Marks	Rank if any
H.S.L.C.					
H.S/P.U.					
B.A/B.Sc/B.Com/LL.B.					
M.A/M.Sc/M.Com/MBA/LL.M.					
M.Phil/M.Litt.					
Ph.D./D.Litt.					

N.B. : Attested copies of marksheets and Certificates of all examinations passed should be enclosed with all seven copies of applications.

13. Past experience if any (give details)
14. Research publications (give details in separate sheets of papers).
15. Present Occupation, if any
16. Name of employer, (if employed)
17. Basic pay drawn
18. Name of two referees (not related to candidate).

I beg to certify that the particulars furnished above are true in all respects. I shall be liable to action at any time if found otherwise.

Date :

(Signature of the applicant)

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GRAM: ASINDU

THE UNIVERSITY OF BURDWAN

RAJBATI : BURDWAN

WEST BENBGAL

Advertisement No. 10/90-91

Dated: December 12,1990

Applications in the prescribed form are invited for the following posts in the approved U.G.C's Scales of Pay :-

(A) Professorship in Bengali (Under D.S.A.) .....One post

(B) Readership in Bengali (One post under D.S.A.) ..... Two posts

(C) Readership in English .... One post

(D) Lectureship in Business Administration .... One post

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As prescribed by the University Grants Commission

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For post indicated at "A" - The Language and Culture of Radh/19th Century Bengali Literature

For posts indicated at "B" - (I) As above (II) 20th Century Bengali Literature

For post indicated at "C" - Areas in order of priority :(1) ELT (2) Commonwealth Literature (3) 18th Century English Literature

For post indicated at "D" - Operation Management

Prescribed application forms along with U.G.C.'s prescribed qualification may be obtained from Rajbati, University of Burdwan Personally on payment of Rs. 10/- in cash at the University Scales Counter from 11 a.m. to 12 noon on Saturdays and from 11 a.m. to 1.30 p.m. on other working days or by sending a self- addressed stamped (Rs.2/-) envelope (11" x 9") accompanied by Crossed Indian Postal Order of Rs. 10/- drawn in favour of the Finance Officer, University of Burdwan.

Last date for submission of application to the Registrar, University of Burdwan, Rajbati, Burdwan-713 104 with requisite fee of Rs.5/- is January 25, 1991.

M.K. Chatterjee

REGISTRAR

UNIVERSITY GRANTS COMMISSION

Applications are invited by the University Grants Commission for **Career Award for young scholars in Humanities and Social Sciences-1990.**

PURPOSE

The purpose of the scheme is to identify young talented scholars, who have established competence and good potential in their area of specialisation and to promote their professional growth by enabling them to devote maximum efforts and energies in research and study with minimum encumbrances and teaching responsibilities.

CONDITIONS OF THE AWARD

The tenure of the Career Awards will be offered for a period of three years to Lecturers/Readers in the Universities/Colleges who are not more than 40 years of age in case of male candidates and 50 years for female candidates on the 1st July of the year 1990 in which the award is made and who have completed doctoral, post- doctoral or other equivalent professional training. The allowances salary of the selected candidates for the Career Award will be protected as per relevant rules. In addition, the Commission will provide each awardee a research grant upto Rs. One lakh including cost of travel (in connection with collection of data), field work, books, equipment, contingencies etc.

The candidates may have to appear for an interview before a Committee.

APPLICATIONS FOR AWARD

Brochure/Application in the prescribed form may be obtained from UGC. The Universities may forward applications of eligible candidates for consideration of the Commission in the prescribed proforma addressed to the Secretary, UGC, should reach the Office of the UGC on or before **15.1.1991**. As far as the autonomous Colleges are concerned, the Principal may forward the applications direct to the UGC under intimation to the University.

davp 90/ 663

BHARATHIAR UNIVERSITY

COIMBATORE - 641 046

NOTIFICATION

MASTER OF COMPUTER APPLICATIONS (M.C.A)

Applications are invited for admission for the academic year 1991-92 to the 3 year full time Master's Degree Course in **Computer Applications** (M.C.A.) of the Bharathiar University.

ELIGIBILITY

1. MASTER OF COMPUTER APPLICATIONS (M.C.A.)

Applicants will be required to possess a B.Sc. Degree in Mathematics/Statistics/Physics/Chemistry/Electronics or B.Com. or B.B.M., (where the candidate has studied Mathematics and/or Statistics for atleast two semesters) B.Sc. (Computer Science) / B.Sc. (Applied Science Computer Technology) for Bharathiar University with FIRST CLASS or a qualification recognised as equivalent thereto by the Bharathiar University. No degree programme of duration less than 3 years after 10 + 2 pattern of schooling is acceptable.

ADMISSION PROCEDURE

Separate Entrance Test will be conducted on Saturday, the 23rd March 1991 at Coimbatore. The entrance examination is likely to consist of objective types of questions, to test general knowledge, logical reasoning, and mathematical ability. Based on the ranking in the entrance examination, short listed candidates will be called for personal interview to be conducted at the University during June 1991.

Candidates appearing for the final degree examinations in April/May 1991, may also apply. However, the candidates selected for the courses, will have to produce proof of having passed their Bachelor's degree course, satisfying the eligibility at the time of joining.

HOW TO APPLY

Prescribed application form can be obtained from **the Registrar, Bharathiar University, Coimbatore**-641 046 by sending a separate account-payee demand draft drawn in favour of the Registrar, Bharathiar University. Application fee for M.C.A. course is Rs. 100/- (in case of SC/ST candidates, application fee is Rs.25/-, if they produce the **attested xerox copy** of the Community Certificate).

The envelope containing the requisition for application must be superscribed as **"REQUEST FOR APPLICATION FOR MCA COURSE"**.

Last date for receipt of completed application at the University : **08-02-1991.**

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